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# Worldwide Report

TELECOMMUNICATIONS POLICY,  
RESEARCH AND DEVELOPMENT

No. 206



FOREIGN BROADCAST INFORMATION SERVICE

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11 March 1982

WORLDWIDE REPORT  
TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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AFGHAN SATELLITE STATION INAUGURATED

LD282218 Moscow TASS in English 2149 GMT 28 Feb 82

[Text] Kabul, 28 Feb (TASS)--A remarkable event took place today in the Afghan capital. The ground station of the space communications "Lotos" included in the "Intersputnik" system went into operation. The station built by the Soviet Union and presented as a gift to the Afghan people is an important means of ensuring stable telephone, telegraph and telex communication with all member countries of "Intersputnik." This makes it possible to receive and relay colour television image accompanied by sound. Due to the efforts of Soviet and Afghan specialists who worked out the principally new technology of assembly of equipment, the station was built in a record time. Present at the inauguration of the station were member of the political bureau of the Central Committee of the People's Democratic Party of Afghanistan, chairman of the council of ministers of the Democratic Republic of Afghanistan Sultan 'Ali Keshtmand, members of the Central Committee of the People's Democratic Party of Afghanistan, representatives of the Kabul public, as well as USSR minister of communications V.A. Shamshin on a visit here.

Speaking at the inauguration ceremony, member of the political bureau of the Central Committee of the People's Democratic Party of Afghanistan, minister of communications of the Democratic Republic of Afghanistan A. Watanjar emphasized the importance of the station for the development of the economy, science and culture of Afghanistan. He expressed sincere gratitude to the Soviet Union for rendering assistance in the construction of the project and stated that this is another vivid manifestation of fraternal relations between the two countries.

CSO: 5500/2131

## BRIEFS

TELECOM DATA LINKUPS--Telecom will start connecting a small group of selected customers to its pilot Digital Data Network (DDN) early in 1982. According to Telecom's Data Division manager, Mr Mel Ward, this will give Telecom the opportunity to check the performance of the system in a working environment. The pilot network began operation in September for testing purposes linking Sydney, Melbourne and Canberra. Mr Ward said this has provided technical staff with the opportunity to gain experience in DDN technology and to evaluate the equipment design and performance. "It is performing every bit as well as we had hoped," he said. "This gives us a great deal of confidence that the full DDN system, when operational, will meet all our expectations." DDN customers will be offered Telecom's Digital Data Service (DDS) in December 1982. Mr Ward said with DDS, Telecom would offer premium, leased line services with high performance, high reliability and new facilities (like Neplex) which have not been possible before. "Installation of the full system is proceeding on schedule and by launch day Telecom will be in a position to offer DDS in all capital cities," Mr Ward said. "In fact we will be accepting applications for DDS from July 1982 onwards." [Text] [Canberra THE AUSTRALIAN in English 22 Dec 81 p 12]

CSO: 5500/7521



BRIEFS

KHULNA TELEPHONE EXCHANGE--Khulna, Feb 6--The Government is committed to develop an efficient telecommunication system because of its important role in the growth of country's trade and economy, Mr Mayeedul Islam, Minister for Post Telephone and Telegraphs, Civil Aviation and Tourism, said here today reports BSS. Inaugurating a new 2000-line automatic telephone exchange at Khulna city this morning the Minister said the Government's plan for telecommunication development was part of its efforts to speed up by national development. With the commissioning of the new exchange the total capacity of Khulna city's telephone system rose to 8000 lines. The exchange was designed, the equipments locally manufactured and installed by Bangladesh engineers. Work on the Khulna Mongla direct dialling and the 400-line auto-exchange of Mongla were progressing steadily it was gathered. 400-line automatic telephone exchange will be soon built in Mohat Sub-division of the district, the meeting was told. Referring to the production of Bangladesh Cable Shilpa Limited, the T and T Minister said the products of the factory were highly acclaimed by International Telecommunication Union Secretary General Mr Mili who recently visited Bangladesh. He said the Government was trying to export the quality product of Cable Shilpa Limited to boost export. Later in the afternoon the Minister opened a post office in the commercial hub of the city. [Text] [Dacca THE BANGLADESH OBSERVER in English 7 Feb 82 pp 1, 12]

CSO: 5500/7089

## NEW EARTH SATELLITE STATION PLANNED FOR PUNJAB

Calcutta THE STATESMAN in English 30 Jan 82 p 10

[Text]

CHANDIGARH, Jan. 29.—The earth satellite station at Chohal near Hoshiarpur in Punjab will be commissioned in March this year, according to Mr G. T. Narayan, general manager, telecommunication services. The station will be linked to Bombay, Calcutta, Delhi and Madras through the geostationary satellite.

Mr Narayan, who was briefing correspondents after inaugurating a three-day exhibition in celebration of the telephone centenary, said there were plans to set up three other such stations at Kalpa, Keylong and Kulu in Himachal Pradesh.

Reviewing the working of the telephone system in this region, Mr Narayan said that at present over 2,700 people were on the waiting list for telephone connexions in Punjab, Haryana, Himachal Pradesh and Chandigarh. He hoped to provide 11,200 new telephone connexions by the end of March 1982.

The general manager said that Ludhiana had the longest list of 6,786 people on the list for telephone connexions. He said a plan

to import an exchange of 600 lines had been approved and it would be commissioned by 1984. In Amritsar, too, a new exchange of 2,500 lines would come up by 1984. The biggest manual exchange of the region at Yamuna Nagar was almost ready to be automatized by the end of this financial year, he said.

Referring to the complaints of delay in transmitting telegrams, Mr Narayan said that Chandigarh had a peculiar problem: a sudden rush of telegrams between 4 p.m. and 7 p.m. This was because of the large concentration of banks and offices of three Governments and a large number of corporations. The problem, he said, had been eased to an extent by the introduction of Gentex services to district stations.

The staff strength was also being augmented and the department was trying to set up more telegraph offices the bulk customers had also been requested to help in spreading over the traffic, he added.

CSO: 5500/7082

## ISRO BEGINS WORK ON REMOTE SENSING SATELLITE

Calcutta THE STATESMAN in English 5 Feb 82 p 13

[Text]

BANGALORE, Feb. 4.—The work has begun at the ISRO satellite centre here on the design of a semi-operational remote-sensing satellite capable of providing multi-spectral imagery with a resolution of 75 and 45 meters.

This was stated here yesterday by Mr U. R. Rao, director of the satellite centre. He was addressing the four-day national space science symposium which opened at the Indian Institute of Science. Mr Rao said that with the successful launching of SLV two years ago, ISRO had gained the capability of launching 40 kg satellites into a near-earth orbit. Another SLV-3 carrying a small application payload was scheduled to be launched in September.

The successful launching of APPLE, a three-axis body stabilised experimental communication satellite, into geo-synchronous orbit and the launching of Bhaskara II, an experimental remote sensing satellite carrying two TV cameras last year, he pointed out, marked the culmination of the experimental phase in the utilization of satellites for practical benefits. Mr Rao said it would be the endeavour of ISRO to make these services operational in the next few years. The launching of INSAT in the next few months would provide communication, TV and meteorological services to the

country on a routine basis. The space scientist said the capability of SLV-3 was being enhanced.

It was expected that the augmented space launch vehicle capable of throwing 150 kg satellites into near-earth orbit would be available within two years. This would provide for the first time, ample opportunities for Indian scientists to carry out meaningful experiments.

Mr Rao said the polar sun synchronous launch vehicle capable of sending 1,000 kg satellites into a sun-synchronous orbit, scheduled for 1983-85, would enhance the "exciting opportunities" that could be fruitfully utilized by the country's scientific community.

Mr R. Daniel, chairman of the national organizing committee of the symposium, said the advisory committee for space science, established recently to serve as a link between ISRO and scientific workers in the field had launched the Indian Middle Atmosphere Programme. A number of Government departments had come forward in support of the programme which would end in December 1985. He said the committee was thinking of erecting a high-power radar costing about Rs 3 crores. The department of electronics had come forward to provide the necessary funds for it.

CSO: 5500/7088

## MINISTER SPEAKS AT TELEPHONE CENTENARY OPENING

Madras THE HINDU in English 29 Jan 82 p 12

[Text]

MADRAS Jan 28

Efforts are being made to set up two factories as soon as possible to produce electronic digital switching equipment for telephones.

Steps have also been taken to increase the equipment output at the Rhee Bareilly unit of the Indian Telephone Industries "from nothing to three lakh lines", of which one lakh will be the Strowger type and the rest cross bar.

Announcing this at the Telephone Centenary celebrations here today, the Communications Minister Mr C. M. Stephen said the new facilities would produce equipment for 15 lakh lines a year. But it would be another three or four years before the factories could start supplying the equipment. Until then, imports were inevitable as the present waiting list for telephones was of the order of five lakhs.

Critics of the department, the Communications Minister said should look at the achievements since independence. There was no denying that India had come a long way in the field of communications. "As far as technological development is concerned, this country has not taken the back seat," he said. "What we are aiming at is not even a quantum jump, it is a Hanuman jump, but Hanuman too took a little time before the jump," he said.

The Minister said that with his knowledge of the working of the various telephone systems in the country, he would give the first prize to Tamil Nadu and Madras Telephones. "The people here are a dedicated lot."

**Commemorative stamp:** Mr. Stephen released a Rs. 2 commemorative stamp brought out by the department to mark the centenary of telephones and presented the album to the Deputy Speaker of the Lok Sabha, Mr. G. Lakshmanan.

The Governor, Mr. Sadiq Ali, who presided said besides modernisation and development, efficiency should be the watchword. A price had to be paid for the machine and the sophisticated technology, but removal of human errors would go a long way in making the service sweet to all concerned.

The Governor released the centenary volume and presented the first copy to Mr. M. A. Muthiah Chettiar.

Mr. Chettiar, who was a director of the

Madras Telephone during the British rule, felt there was room for improving efficiency.

**Microwave network:** Mr. S. K. Ghose, Secretary, Communications Ministry, who declared open the Centenary Exhibition said that within the next three years most of the complaints in the system, would be completely removed.

The cricket test at Calcutta could not be telecast to other centres because the microwave link between Delhi and Calcutta could not be completed by then. He hoped that the current year's Wimbledon tournament could be relayed to the four metropolitan centres.

The General Manager of Madras Telephones, Mr. K. C. Ramadoss, welcoming the gathering, said it was an occasion for the organisation to rededicate itself for even more satisfactory service to the public. The Deputy General Manager, Mr. S. G. K. Pillai proposed a vote of thanks.

Mr. Stephen inaugurated a Telephone Centenary colony at Anna Nagar.

He said State Governments would have to make available land for the expansion of postal and telecommunication services.

Every State wanted more telephone exchanges but was not prepared to give land. That made it difficult for enlarging the facilities, he said.

The waiting list for telephones now stood at half a million. His Ministry was considering clearing the expansion of telecommunication network to those States which came forward to allot the required land.

Mr. Stephen said paucity of staff quarters particularly in metropolitan cities was one of the most difficult aspects of the service conditions of P & T employees.

The Planning Commission had now agreed to allot more funds for this purpose. His Ministry had a scheme to build hostels in major cities for employees, without affecting other schemes like the construction of flats.

Mr. S. K. Ghosh, Secretary, Union Ministry of Communications, said priority was now being given to provide housing to employees.

Mr. K. C. Ramadoss, General Manager, Madras Telephones, welcoming the gathering, said the colony consisted of 324 quarters.

## OFFICIAL URGES PRIORITY FOR TELEPHONE INDUSTRY

Bombay THE TIMES OF INDIA in English 29 Jan 82 p 7

[Text]

BOMBAY, January 28.

**T**HE planning commission should accord a higher priority to the telephone industry and bring it in the core sector, in view of its role as an instrument of accelerated growth.

This was stated by Mr. F. C. Jauhari, general manager of Bombay Telephones, at a meeting with members of the Indo-American Chamber of Commerce, here today.

An expert committee had already recommended that the telephone industry should be brought in the priority sector and the answer was being awaited anxiously, Mr. Jauhari added.

He said because of the low priority to the telephone industry, subscribers had to put up with a number of problems like obsolete equipment and a long waiting period.

Today there were 140,000 people on the waiting list in Bombay alone and in some places like Khar and Andheri, applicants had to wait for as long as 12 years to get a telephone connection, he said.

By 1986 the number of telephone connections in Bombay would increase to 850,000 from its present strength of 450,000, Mr. Jauhari said.

According to him, with one telephone for six heads of population in Bombay, the situation was "not very bad."

Conceding that telephone services

in India were "undoubtedly inefficient", Mr. Jauhari disagreed that they were the "worst in the world." There were some countries where telephone services were worse than India, he felt.

Due to the paucity of resources in the country it would be difficult to replace all of the "obsolete equipment" and "we may have to live with it for another 20 years", Mr. Jauhari felt.

The telephone instruments made in India were "vulnerable and weak" and there were defects in the new cross bar equipment used. Steps were being taken to rectify the faults in the equipment, Mr. Jauhari said.

He said the aluminium conductors used in connecting telephones were causing a "lot of problems" and hence a gigantic programme to replace them with copper had been undertaken six months ago.

Telephone cables should preferably be laid out in ducts but this was not possible in India, again due to scarce resources, Mr. Jauhari added.

Bombay Telephones faced the problem of operators leaving their jobs and switching over to more lucrative ones in the private sector, he said. Every year about 250 good operators left for better prospects, he added.

Mr. Jauhari cautioned the public against the 60-odd agents in Bombay, who promised quick telephone connections and prompt repairs. "They are our enemies and nothing but black-mailers", he added.

CSO: 5500/7083

## BRIEFS

TELECOM IMPROVEMENTS FOR NORTHEAST--Shillong, January 1--Telecommunication facilities will be expanded and improved in the hitherto neglected northeastern region with an estimated outlay of Rs. 75 crores during the sixth plan period. Disclosing this at a press conference here yesterday Mr Mukund G. Joshi, general manager, telecommunications, northeastern circle, said that besides Aizawl, which already had an earth satellite station, Shillong (Meghalaya), Itanagar (Arunachal Pradesh), Kohima (Nagaland), Imphal (Manipur) and Agartala (Tripura) would be brought under the satellite communication system by June this year. Ultra high frequency (UHF) radio relay system would be introduced for providing a reliable transmission medium for connecting the district headquarters to the national trunk network. Subscriber trunk dialling (STD) services were also proposed to be provided between various state capitals and district headquarters in the region by March 1985, he added. It is also proposed to introduce very high frequency multi-access radio relay system at Imphal and Agartala, on an experimental basis, to connect a group of villages to the main exchanges, as part of the extension of improved telecommunication facilities in the predominantly rural areas of the region. According to Mr Joshi, digital technology is proposed to be introduced in the region to provide disturbance-free telecommunications and keep pace with the growing tempo of economic development. Integrated telecommunication network using digital technology will be introduced in north Lakhimpur district of Assam and Kohima, Mokokuchung and Tuensang districts of Nagaland. It is also proposed to install highly advanced electronic containerised portable automatic exchanges at Silchar, Dibrugarh, Jorhat and Tinsukia. [Text] [Bombay THE TIMES OF INDIA in English 1 Feb 82 p 15]

JALGAON TELEPHONE EXCHANGE--Jalgaon, February 3 (PTI)--The Union deputy minister for communications, Mr Vijay Naval Patil, commissioned here today an additional automatic telephone exchange augmenting the number of lines at Mahasavad, in Jalgaon division, by 25 lines. Mr Patil said that the posts and telegraphs department has undertaken an expansion programme to provide communications facilities to the rural masses. The minister had earlier commissioned the additional 120-line phone exchange at Amalner. [Text] [Bombay THE TIMES OF INDIA in English 4 Feb 82 p 3]

REMOTE SENSING CENTER--Madras, Feb. 3--The setting up of a Remote Sensing Centre at the Perarignar Anna University of Technology (PAUT) has been approved by the Tamil Nadu Government. The Centre will help in Geological studies, groundwater location, minerals investigation, agriculture and forestry. This project, which will cost Rs. 76 lakhs, marks the first major step in the university's involvement in assisting the State Government using modern tools in surveying and data collection. Dr V.C. Kulandaiswamy, Vice Chancellor, PAUT, told the Syndicate on Saturday that the Centre would be developed to its full capacity over a period of four years. He also announced that a Rural Housing Wing has been sanctioned for PAUT by the National Buildings Organisation, New Delhi. Besides training those engaged in rural housing work, the wing will also take up research in developing materials and technique for construction of inexpensive houses. The University Syndicate approved a faculty development programme for scheduled caste and tribe candidates. [Text] [Madras THE HINDU in English 4 Feb 82 p 12]

CSO: 5500/7087



JAPAN TESTS FIBER OPTICS TRANSMISSION SYSTEM

OW171335 Tokyo KYODO in English 1245 GMT 17 Feb 82

[Text] Tokyo, 17 Feb, KYODO--Japan has successfully conducted a field trial of a submarine, repeater-equipped long-distance fiber-optics transmission system, it was announced Wednesday.

The governmental Nippon Telegraph and Telephone Public Corporation (NTT), which conducted the trial, said the success means Japan has taken a big step toward putting a long-distance submarine fiber-optics communication system into practical operation.

An NTT spokesman said the corporation would continue research on the system so that it may be put into practical use between Southern Kyushu and Okinawa, a distance of 1,000 kilometers, by fiscal 1985.

The spokesman said submarine fiber-optics cables totaling 45 kilometers in length were laid late last month on seabed at depths up to 1,000 meters off Yahatano on the East Coast of the IZU Peninsula, Southwest of Tokyo, by the submarine cable-layer Kuroshio Maru.

The two repeaters, are 15 and 30 kilometers apart on a cable loop. The system has a transmission rate of 400 megabits and is of single-mode type, the spokesman said.

He said as a result of the test, it was confirmed that high-speed digital signals, equivalent to 5,7600 telephone circuits, could be accurately transmitted by the system over a 45-kilometer distance in a rigorous submarine environment.

The spokesman said that a short-haul nonrepeatered submarine fiber-optics transmission system field trial was successfully conducted by NTT in 1980.

Submarine fiber-optics cables totaling 10 kilometers in length were then laid from Inatori to Kawazu along the East Coast of the Izu Peninsula, near the site of the latest trial. The transmission system tested at that time consisted of submarine fiber-optics cables with repeater equipment at both shore terminal stations, but without any submarine repeaters, he said. The spokesman said that in Britain, an eight-kilometer nonrepeatered submarine fiber-optics transmission system of the 140-megabit type was tested in May 1980.

CSO: 4120/164



## AUSTRALIAN TV FOR NEW ZEALAND BY SATELLITE PLANNED

## Signals from Intelsat IV

Auckland THE NEW ZEALAND HERALD in English 23 Jan 82 p 1

[Text]

An Adelaide company is planning to introduce Australian television to New Zealand, but broadcasting officials in this country are sceptical about the proposed third channel.

The company, Hills Industries Ltd, is confident that New Zealand, Papua New Guinea and Fiji will be able to receive Australian Broadcasting Commission transmissions later this year.

Since late last year the company has been selling receivers that pick up signals from Intelsat IV, the international communications satellite, in isolated areas of Australia.

The existing system consists of a curved screen 6 metres square, which reflects microwave transmissions of Australian Broadcasting Commission television from Intelsat IV into a collecting horn.

When the satellite is replaced by Intelsat IVa later this year its beam will cover a wider area, taking in the North Island and the upper half of the South Island.

The assistant managing director of Hills Industries, Mr Ralph Aston, said last night that the company intended to sell its receivers in New Zealand when the new satellite came into operation.

The receiver cost about \$7500 in Australia, and Mr Aston expected the price to be similar in New Zealand.

One receiver could serve several television sets, he said, and individuals could join to share the cost.

"There would be a considerable demand for this service," he said. "And at the present time international law states that there can be no debarring of receiving signals from any satellite."

The chairman of the New Zealand Broadcasting Corporation, Mr Ian Cross, was less confident about the viability or legality of the operation.

"It sounds very far-fetched," he said. "Mr Aston is probably eight or nine years ahead of his time."

Mr Cross doubted that technology was sufficiently advanced for satellite television in New Zealand.

Most New Zealand viewers would not consider investing in a receiver for many years because of the price and the uncertainty of the reception, he said.

Satellite television could not compete with local television, said Mr Cross. The news would be out of time sequence and the commercials would be irrelevant.

"And the legal situation is far from clarified," he added. "The problems would be immense."

The director-general of

Television New Zealand, Mr Allan Martin, described the scheme as "pie-in-the-sky." Technological refinements were needed before satellite television could work in New Zealand, he said.

Mr Martin said the plan was a possibility in the late 1980s.

Television New Zealand would not be concerned by the competition, he said.

Mr Aston said those who were sceptical about the plan were "out of touch." His company would apply for an import licence to bring the receivers into New Zealand as soon as Intelsat IVa was

operating.

## Competition Not Feared

Wellington THE EVENING POST in English 25 Jan 82 p 4

[Text]

Australian television would have more to fear from New Zealand than vice versa if "back-yard"

satellite receivers picking up overseas broadcasts became popular. Television New Zealand's di-

rector-general, Mr Allan Martin said today.

The New Zealand Press Association reports that an

Australian company, Hills Industries, which produces satellite receiving systems, has announced a plan to extend to foreign countries the

Telsat system which services some outback regions.

The company has predicted that countries including New Zealand would soon be using the system to watch Australian channels.

Mr Martin said from Auckland today the announcement did not worry TVNZ.

"We've nothing to fear from Australian programmes," he said.

If TVNZ began to be picked up in Australia, the Australian services would have more to fear because they have a bigger audience

and the standard of television in New Zealand is better, Mr Martin said.

The Hills Industries system at present involves a six-metre-square curved screen and microwave collecting horn, which cost about \$NZ10,000 per installation.

Mr Martin said the cost would probably prevent the system from becoming popular here.

He did say, however, that with present breakthroughs in the United States, a system which costs only \$200 to \$300 might soon be in operation there.

He said there were about 7000 to 8000 "back-yard" types of receivers in operation in America at the moment, but they were still not economic.

With advances being made, Mr Martin said he could see some sort of satellite system operating between New Zealand and Australia within five or six years.

"We will be watching developments."

Links with countries such as America would not happen for at least 10 years, he said.

The expansion of satellite services would probably have a lot of legal implications. Binding international agreements, such as those which radio operates under might have to be reached to prevent an open-slatther situation, Mr Martin said.

But even if countries such as the United States started broadcasting programmes here, Mr Martin does not feel it would endanger TVNZ.

"There will always be a demand for local programmes such as news and sport."

CSO: 5500/9025

## BRIEFS

INTELSAT V SATELLITE ANTENNA--The Post Office aims to have a second antenna operating at the Warkworth satellite station by the middle of next year, in time for the launching of an updated satellite. Earthworks on the site have begun and construction of the antenna and a building beneath it will start in the middle of this year. The expansion of the station, expected to cost \$12 million, will include upgrading the power plant and extending the existing building to handle increased international communications. The Post Office engineer in charge of the station, Mr K. G. Elliott, said the second antenna was needed for a different system of transmitting signals used by the new satellite, Intelsat V. The new system would double the capacity for communication on one frequency. New Zealand would also have a third submarine cable in 1984, in response to the increase in international communication, said Mr Elliott. The cable would link New Zealand from a terminal at Takapuna to Canada, Australia and several Pacific nations. [Text] [Auckland THE NEW ZEALAND HERALD in English 23 Jan 82 p 1]

CSO: 5500/9025

## BRIEFS

URDU TELEPRINTER SERVICE--Urdu teleprinter service would be introduced in every telegraph office of the country by September this year, it was reliably learnt here. These teleprinters are being manufactured at Hazara Telephone Industry following the decision of Federal Cabinet. These teleprinters would communicate both in Urdu and English languages. It is further learnt that these teleprinters could also be introduced in newspapers. [Text] [Karachi BUSINESS RECORDER in English 22 Jan 82 p 4]

AZAD KASHMIR TRANSMITTER--Muzaffarabad, 17 Feb--One hundred and fifty kilowatt high-powered transmitter (HPT) of Azad Kashmir Radio will be commissioned during June this year. The HPT which has almost been completed at a cost of RS 85 million would feed about 200 mile radius during day time while at night its coverage area would range within 2,500 miles.--APP [GF220750 Karachi DAWN in English 18 Feb 82 p 4]

CSO: 5500/5697

## BRIEFS

RADIO COOPERATION PROTOCOL SIGNED--A new working protocol for 1982-83 on cooperation between Czechoslovak radio and the USSR state committee for television and radio was signed at the hotel international in Prague today. The document was signed by Jan Risko, director general of Czechoslovak radio, and by Sergey Lyapin, chairman of the USSR state committee for television and radio. The new working protocol envisages further development of cooperation in all sectors of radio broadcasting, which will be directed primarily on the explanation and implementation of the conclusions of the 26th CPSU Congress and the 16th CPCZ Congress. Czechoslovak and Soviet radio organizations will pay special attention in their programs to the 65th anniversary of the great October socialist revolution and the 60th anniversary of the founding of the USSR. [Text] [LD231614 Prague Domestic Service in Czech and Slovak 1430 GMT 23 Feb 82]

CSO: 5500/2131

## MINISTER DWELLS ON FUTURE IMPROVEMENTS OF PHONE, RADIO, TV COMMUNICATIONS

Sofia IMPULS in Bulgarian 5 Jan 82 pp 1, 3

[Interview with Pando Vanchev, minister of communications, conducted by Lyuba Anachkova: "With Greater Responsibility and Creativity"]

[Text] [Question] The 12th party congress faced communications with extensive tasks. What type of organization will be created for their implementation?

[Answer] The ministry uses a variety of methods and means for the solution of its tasks. Naturally, because of the nature of the work, we pay serious attention to organizational methods. We seek new forms of management and improvements in our organizational structure and management style and methods.

The new structure of the ministry is far better suited to the needs of our daily practical activities. It concretizes the rights and obligations of managers and contributes to the even more effective solution of the problems. At the same time, we make use of the great opportunities for providing purposeful management influence through the economic mechanism.

We are steadily improving the brigade organization of labor in accordance with the specific conditions of communications services. We are experimenting with the consolidation of some brigades and with expanding the use of intracost accounting with a view to relating the wages of all labor collectives to end labor results.

In the future, the size of the brigades will be expanded within the rayon stations in order to reach full interchangeability and develop reciprocal aid among communications workers within a given conurbation system. This will result in the fuller and more effective use of the three elements of the production process: labor objects, labor tools and labor. At the same time, it will be a contribution to the implementation of the decision of the 12th BCP Congress on the establishment of conurbation systems as socioeconomic and administrative units of the new type.

The structuring of the brigades on the basis of this principle offers greater opportunities for the intellectualizing of labor in communications, the organization of efficient servicing of the equipment, the mechanization of mail and printed matter deliveries, etc.

As a result of better labor organization, labor productivity will increase by 39.70 leva in 1982. We shall save on labor, improve the quality of services and raise service standards.

[Question] What kind of new equipment will be used in the development of the future settlement and intersettlement telephone communications?

[Answer] This is a major problem facing our technical policy.

We know that one of the basic reasons for the still unsatisfactory condition of settlement telephone communications is the equipment used, namely the A-29 electro-mechanical exchanges.

Aware of this situation, for a number of years the ministry has been seeking possibilities for their improvement and updating. It is clear, however, that this equipment has already exhausted all of its possibilities.

We know that the future belongs to electronic automated exchanges. However, we also know that no single country can afford the luxury of replacing all of its old exchanges with new ones at the same time. The pursuit of a proper technical policy in the development of communications is a complex process which has already been started in our country.

The program of the Ministry of Communications for the Eighth Five-Year Plan calls for the installation of two new generations of telephone exchanges consistent with modern communications requirements.

Although with a great deal of difficulty, we are already installing quasi-electronic telephone exchanges produced by our communications industry. We are intensively working on acquiring electronic high capacity telephone exchanges, mainly for the capital. The electronic international automated telephone exchange will be completed between the end of 1981 and the beginning of 1982. Let me emphasize that the development of modern telephone equipment will take place mainly in the capital. In the smaller settlements we shall begin to install exchanges handling up to 2,000 sets with microprocessor control facilities the production of which is being mastered by our industry.

The expansion of the circuits of interurban telephone communications will be continued. In the first years of the current five-year plan, about 35 additional settlements of important economic significance will be included in the circuit. The handling capacity of interurban and international telephone communications will be increased. By the end of the five-year plan we intend to undertake the construction of two other interurban quasi-electronic exchanges, in Blagoevgrad and Burgas, of the Cross-point type.

More specifically, the following settlement projects will be completed in 1982: the automated telephone exchanges and cable network in Varna, Stara Zagora, Mikhaylovgrad, Razgrad, Smolyan and Burgas handling a total of 10,700 telephone pairs.

[Question] The new equipment will be serviced by highly skilled cadres. Has the cadre policy of the ministry regarding future operations been formulated?

[Answer] Yes, the ministry's cadre policy for the next few years is clear and specific. It legitimately stems from a properly formulated technical policy. The new generations of communications installations, some of which are already part of our daily



life, require specialists different from those of today. This is natural. There are already visible trends toward the complete integration of communications and computer equipment. Even some of the basic functions of communications are changing. Their technical information possibilities are being expanded. All of this leads to the appearance of a number of new skills not stipulated in our present tables of organization.

In the future we shall look for and train specialists in the areas of programming, mathematics, sociology and other areas new to us. Most of our technical cadres will consist of electronic engineers. At the same time, we shall enhance the general and specialized training of the newly hired workers, specialists and managers. Post-graduate specialization and systematic enhancement of the skills of managerial and performing cadres will be needed. Such specialized training will be provided by the Academy of Social Sciences and Social Management, the higher educational institutions, the Scientific Research Institute of Communications of the PROON, and by foreign institutions. Management cadres and specialists will improve their skills mainly at the Institute of Social Management, the Communications Training Center and the departmental training institutions.

The ministry's management is aware of the current and future requirements concerning communications cadres. Our cadre policy is clear. Unfortunately, however, we are still weak in the area of preparations for its implementation. So far we have accomplished very little, virtually nothing. That is why the problem of our present and future cadres will be considered a priority this year and will have to be resolved urgently, successfully and effectively.

[Question] The decisions of the 12th congress call for the blanket coverage of the country's territory with regular television programs. How is this problem being resolved?

[Answer] The main socioeconomic task for the Eighth Five-Year Plan, based on specific circumstances, is to apply the achievements of science and technical progress extensively with a view to broadening the scope and improving the quality of services and expanding the network of transmission and relay stations which will ensure full and qualitative transmission of radio and television programs in the country.

In terms of medium and long wave radio broadcasting, this will be accomplished through the construction of several additional powerful medium wave radio transmitters and the modernizing and reconstruction of existing ones. The main feature in this respect is to increase the power of medium wave radio transmitters. This will improve the quality and audibility of reception in the areas which are serviced and will prevent our frequencies from disturbances caused by foreign radio transmitters. According to the new international frequency allocation plan (Geneva, 1975), our country was given the right to set up a powerful long wave radio transmitter, which will be accomplished in the Eighth Five-Year Plan. This will enable us to broadcast Bulgarian radio programs throughout the country more extensively. In some microrayons below-capacity medium wave automated synchronized relay stations will be built as well.

During the next few years ultrashort wave radio broadcasting will become the basic source for the reception of high-quality radio programs, including stereophonic broadcasts. We shall complete the building of the currently existing three ultrashort wave FM radio broadcasting networks within the 66-74 megahertz range. The development of the 100-108 megahertz FM range will be particularly advantageous. We shall undertake the development of new networks for stereo broadcasts.



The full satisfaction of population requirements with the two national television channels will be accomplished with the construction of new television facilities, such as the Sofia Comprehensive Radio and Television Transmission Center, the television and ultrashort wave stations covering the Ruse, Gogdze, Delchev, Vidin, Mikhaylovgrad and other areas and the reconstruction, expansion and modernization of existing facilities. A number of new television relay stations will be built as well.

In order to ensure the qualitative transmission of radio and television programs and open new channels for the automation of interurban telephone communications, new broad-band radio relay lines will be opened.

During the Eighth Five-Year Plan and through 1990 we shall also experiment with the of some new methods for the transmission of radio and television programs. Together with the other socialist countries, experimental transmissions of radio and television programs from a satellite will be carried out within the framework of the Interkosmos program. Experimental work will be done in the area of cable television.

In addition to the building of new radio and television facilities, during the Eighth Five-Year Plan we shall continue with the implementation of the program of the Ministry of Communications for the modernizing and reconstruction of the existing material and technical facilities. The purpose of this will be to improve the quality of broadcasting and to stabilize the work of existing installations. At the same time, measures will be implemented to ensure the technical improvement of transmission and carrying equipment with a view to introducing telemetric control, management and unmanned facilities for individual installations and projects and radio and television networks and systems.

[Question] The question of improving the quality of services and their expansion was raised at the 24 October 1981 national conference. What is the ministry's program in this area?

[Answer] We shall broaden the postal network by opening 161 new post telegraph and telephone stations during the Eighth Five-Year Plan. Their number will reach 3,018, with one station per 3,017 people and 36.4 square km. We shall increase the number of centers for the sale of newspapers and periodicals by more than 400. By the end of 1985 one such center will service an average of 5,500 people in the cities. We shall open another 130 mobile facilities for the sale of newspapers distributed by hand, or sold from tables and carts. The number of departmental stores and newsstands will reach 1,163 and such facilities operated by other commercial organizations will be increased by another 200. We shall also increase the variety of goods sold and services rendered by printed matter stores and newsstands. In settlements where the opening of centers for the sale of newspapers and periodicals not profitable, such sales will be handled by the post offices.

A new type of newsstand consistent with contemporary requirements for cultural services to the population has been developed. During the Eighth Five-Year Plan about 400 such newsstands will be manufactured.

In order to improve services to workers in big plants and enterprises employing more than 5,000 workers, post offices, booths and centers for the sale of newspapers and periodicals will be opened on their territory. The managements of the respective enterprises will provide suitable premises for this purpose.

During the Eighth Five-Year Plan motorized deliveries through group delivery boxes and centers will be expanded, thus facilitating heavy physical labor and shortening transportation time.

By 1985 automated control systems--PPKD--will reach the level of regional communications stations. This will lay the foundations for automatic acceptance, processing and control in the area of money transfers.

The containerized system for mail and newsprint haulage will be expanded with the opening of 20 basic distribution centers in the country.

During the Eighth Five-Year Plan we shall continue to expand services to the citizens at home in the payment of pensions, postal money orders and other services; postal offices or sectors for self-service by the population will be opened in the okrug centers and the bigger cities.

The management of the Ministry of Communications is always concerned with improving the quality of telephone services.

The efforts of the specialists are focused on the following main directions:

Improving the technical condition of telephone equipment, increasing the handling capacity of the communications system, improving the skill of maintenance cadres for communications facilities and improving technological discipline and service standards. We shall continue with the installation of automated testing equipment in all direct dialing exchanges in okrug centers.

More equipment will be added to some direct dialing exchanges in the country on the basis of traffic surveys with a view to increasing their handling capacity.

A total of 500 coin telephone sets will be installed for interurban communications.

The older model coin telephone sets for local calls will be replaced by new ones procured from the USSR.

Priority will be given to residential areas in cities (settlements), plants, hospitals, schools, etc, with insufficient telephone facilities in expanding the network of coin-operated telephones.

Optical-pair cables with compressed air control will be installed to protect the cables and prevent breakdowns. By the end of the Eighth Five-Year Plan there will be 1,181 settlement-connecting cables.

A more modern technology will be used for recording the number of calls by photographing data which will be processed with computers.

Particular attention will be paid to cadre skills.

The scientific center of the Ministry of Communications will organize courses for upgrading the skills of technical cadres working not only within the communications system but in establishment telephone exchanges.

The Ministry of Communications will control the condition of establishment telephone exchanges in the country in order to improve their technical status and increase the number of lines in accordance with approved norms. This is an essential factor in ensuring the normal development of intensive public telephone traffic.

We shall focus our efforts on increasing the variety of services offered to the citizens. We have completed the organization of a nationwide Exact Time system. Some new services will be introduced such as "information on absent subscribers" or damaged telephone sets based on the automated telephone information facility, etc.

[Question] Comrade Minister, I expected that in the course of this conversation you would go back to the question of telephone communications in the capital. You have set high goals for the collective of the Sofia Telegraph and Telephone Stations....

[Answer] Yes. And the collective and its management pledged to meet them. Sofia must have model telephone communications matching worldwide standards.

Equipment for the automatic testing and control of facilities has been installed in almost all direct dialing exchanges in Sofia. Comprehensive efforts are being made to improve the quality of communications and to ensure prompt equipment repairs.

New capacities for 7,000 telephone pairs will be built in 1982.

The Krasna Polyana, Lozenets and Khladilnika districts will have new direct dialing exchange buildings.

1982 will be a good year for Sofia residents and guests in terms of telephone services.

The management of the Ministry of Communications will demand of the collective of the Sofia Telegraph and Telephone Stations a great deal of effort and effective solutions.

5003

CSO: 5500/3006

## BRIEFS

TELEPHONE EXPANSION PROGRAM--Belmopan, Belize, 20 Feb (CANA)--The Belize Telecommunication Authority [BTA] has just completed a two-and-a-half-year expansion programme of the national telephone system. The programme was undertaken by Plessey Communications, a British firm, under a 18.6 million dollar contract with the BTA (one Belize dollar: 49 cents U.S.). It included the modernization of the main exchange at Kings Park Centre in Belize City, still the chief administrative centre, with a fully automatic electronic exchange. Exchanges in the main district capitals were also expanded. The exchange capacity of the national telephone system nationwide has now doubled from 4,000 to 8,000. The authority is also continuing work on the improvement of the rural telephone system. It has indicated that more rural exchanges will be linked to the main exchanges soon. [Text]  
[FL201702 Bridgetown CANA in English 1613 GMT 20 Feb 82]

CSO: 5500/2129

## COSTA RICA

### RADIO STATIONS OVERPOWERED BY POWERFUL FOREIGN STATIONS

San Jose LA NACION in Spanish 25 Jan 82 p 6A

[Article by Hubert Solano]

[Text] Costa Rica has become fully involved in the ideological war of broadcasting station power which has broken out in the Caribbean region between communists and anticommunists who want their transmissions, primarily of political interest, to reach the most remote areas without regard for national borders.

The National Chamber of Broadcasters (CANARA), an association of all the Costa Rican commercial radio stations, warned of the danger from the high-powered broadcasting stations in Nicaragua, Cuba and other nations which violate our sovereignty.

Hence, at their last meeting, the directive board of CANARA appointed a technical committee to analyze the resolutions adopted at the recent Rio de Janeiro, Brazil conference, at which impediments were placed in the way of national radio stations increasing their power.

#### The Cuban Problem

The problem began when the Cuban delegation walked out of the conference and so is not a signatory of the document which was subsequently signed.

According to CANARA, Cuba is planning radio stations with an output of more than 100 kW which will obviously cause interference with our radio stations.

Rigoberto Urbina, president of CANARA, stated that in the Caribbean region plans are being made for an "ideological war" using radio as a weapon, and he said that this can cause "serious and grave damage."

He said, "What our national broadcasting stations seek is to protect our sovereignty and to have the public listen to our own radio stations."

An emergency meeting of the technical committee was called for today to analyze the effects of the range of foreign transmitters at sensitive points in our country where listeners, primarily in the northern and Atlantic regions, will hear foreign broadcasts with political purposes.

The committee consists of Alvaro Mora, Arnolfo Alfaro Chavarria, Roy Jimenez, Carlos La Fuente and Mr Urbina. They will meet in San Jose in the offices of ELCOR, a radio broadcasting enterprise with Costa Rican capital.

#### Nicaragua With Czechs

In addition, Carlos Dario Angulo, the secretary of CANARA, said that several broadcasters have reported to CANARA the interference they are getting from Nicaraguan stations.

He added that in the Nicaraguan radio stations Czechoslovak transmitters are being installed and that there is proof that Cuban advisers are setting up those beamed toward Costa Rica.

He also said that Nicaragua must comply with the Rio de Janeiro agreement or, if it does not, Costa Rica will call upon specialists in public international law to make the appropriate charges.

#### Venezuela Also

It has also been reported that in Venezuela one of the most powerful broadcasting stations in the world is being installed to interfere with the broadcasts by the communists in the Caribbean region.

For example, it is said that this station will have twice the power of the one that was going to be set up in Paraiso de Cartago with the Voz de la Victory for the same purpose.

The Venezuelan transmitter will have an output of more than one megawatt.

#### High Costs

Concerning the possibility of Costa Rica also increasing its power in order to interfere with the Cubans and Nicaraguans, it was said that the increasing cost of electricity prevents it.

Besides, it was said, the equipment required is extremely expensive.

Some Costa Rican radio stations had acquired equipment before the rise of the dollar but now they have reservations about putting it into service due to the high cost of spare parts.

For example, Radio Reloj recently acquired a 50-kW transmitter but a single tube costs \$5,000. Thus, each one of those tubes is worth 250,000 colons and several must be kept as spares.

9204

CSO: 5500/2113



## BRIEFS

FREQUENCY TO CHANGE--Radio Reloj's frequency, as well as the frequencies of other radio stations, will change at 1300 on 25 February, the deputy minister of government has announced. Radio Reloj operates on 700 KHZ and will now operate on 730 KHZ in accordance with a ministry of government decree. The change in frequencies is designed to allow two new radio stations to go on the air, Deputy Minister of Government (Harry Volstein Rubinstein) added. [San Jose Radio Reloj in Spanish at 1730 GMT on 19 February adds that "Radio Reloj will continue transmitting on its 700 KHZ frequency until March. None of the low frequency radio stations will be able to change channels due to the lack of radio crystals. They were ordered from a U.S. firm but the shipment was sent to the wrong destination. The government ministry announced yesterday that all radio stations in the country would change their frequencies this coming Monday, but today it was announced that this will not be possible because the crystals will not arrive until March."] [Text] [PA191515 San Jose Radio Reloj 0100 GMT 19 Feb 82]

'PENETRATION' CAUSES CONCERN--Public Security Minister Arnulfo Carmona Benavides has asked the foreign minister to contact the Nicaraguan authorities as soon as possible to inform them of the problem that some Nicaraguan radio stations create for the government of Nicaragua [as heard]. Because of their strong signal, those radio stations silence the national stations and since the penetration of foreign programs threatens us with the loss of our national character, Mr Carmona has found it necessary to dedicate himself fully to the problem. [Text] [PA191303 San Jose Radio Reloj in Spanish 0100 GMT 19 Feb 82]

CSO: 5500/2129

## EGYPT-NORTH AFRICA MICROWAVE LINKUP

Cairo AL-AHRAM in Arabic 2 Feb 82 p 11

[Article by Jabir al-Maj'awi: "Cairo Linked by Radio with Al-Sallum and North Africa; Relay of Audio and Television Broadcasts to the Desert Starting This February"]

[Text] Cairo will be linked up with al-Sallum and the cities of north-west Africa by radio through the microwave project which comprises 20 radio and broadcasting stations over the 850 kilometers between Cairo and al-Sallum.

Maj Gen Yusri al-Shami, Governor of Matruh, stated that preliminary tests of these communications will be underway the first part of this month following the installation of all technical equipment in the facilities which cost 12 million pounds and took 7 years to complete.

The governor added that the microwave will help to strengthen radio signals to reach northern and western Africa and will meet the needs of the projected jump in development, mining, agricultural expansion and oil prospecting in parts of the western and southern desert, not to mention the absorption of large numbers of people who had outstripped the fertile area in the Nile Valley.

In addition, preparations are now underway to relay Cairo's audio and television broadcasts to all areas of the desert and northwestern coastal region to give the whole area clear reception this February.

The governor stated that the microwave has a capacity of 960 channels between Cairo and al-Sallum, compared with the three channels currently operating. In addition, the Ministry of Interior has constructed a large radio station linking parts of the western desert to safeguard travelers and to achieve security over the desert roads.

The senior Japanese experts who built the project say that it is based on the use of short waves in linking the stations without interference. Therefore, the Japanese company which specializes in microwave installations decided to use high towers to hold the antennas. These networks cover three stages. Also, a coaxial cable was run from Cairo to al-Sallum to improve the relay of radio and landline signals. This cable cost about 16 million pounds.

8389

CSO: 5500/5007



## WAKH PROJECT TRANSMITS NETWORK VIA SATELLITE APPROVED

GF231945 Manama WAKH in Arabic 1455 GMT 23 Feb 82

[Text] Kuwait, 23 Feb (WAKH)--The WAKH Board of Directors has approved a WAKH project for a transmission network via satellite. The project will be put in operation at the earliest possible date.

During today's regular meeting chaired by Tariq 'Abd al-Rahman al-Mu'ayyad, Bahraini information minister and chairman of the WAKH Board of Directors, the board also decided that a special study on an integrated transmission network via satellite will be drawn up by the directors of the news agencies of the board's member countries and will be discussed at their next meeting. The study will then be referred to the board's next meeting.

The WAKH Board of Directors approved the project to distribute news via the WAKH transmission network so that Arab league offices throughout the world will be linked to the WAKH network. The board decided to reelect Bahraini Information Minister Tariq 'Abd al-Rahman al-Mu'ayyad Chairman of the Board. The board also reviewed the general report and approved it.

The board approved WAKH's 1982 budget. It also agreed to amend the article regarding the shares of WAKH member countries so that these share will be in the same proportion as those in other Gulf information media.

The board of directors reviewed an INA memorandum. It was decided that the directors of news agencies of member countries will meet twice a year at the invitation of WAKH's director general.

The board heard the tribute by the Gulf information ministers on WAKH's information role. The ministers stressed the importance of strengthening this role so that it will serve Gulf and Arab information media.

The meeting was attended by Tariq 'Abd al-Rahman al-Mu'ayyad, Bahraini minister of information and chairman of WAKH's board of directors; Shaykh Sabah al-Ahmad al-Jabir, Kuwaiti deputy prime minister, foreign affairs minister and information minister; Dr Muhammad 'Abduh Yamani, Saudi information minister; Latif Nusayyif Jasim, Iraqi culture and information minister; 'Isa Ghanim al-Kuwari, Qatari information minister; 'Abd al-'Aziz al-Rawas, Omani information and youth affairs information minister; 'Abdallah al-Nuways, UAE Information Ministry under secretary; Shaykh 'Isa Ibn Rashid al Khalifah, Bahraini information ministry under secretary; and Nabil Ya'qub al-Hamar, WAKH director general.

CSO: 5500/2131

BRIEFS

TELECOM LINKS--North and South Yemen, Djibouti and Somalia are to be linked by a microwave communications network as part of a project initiated by the Telecommunications Regional Network for the Middle East and the Mediterranean Basin which met in Aden last week. The French company Thomson and Italy's Telestar will execute the project, while the British company BCR and the Swedish firm Switel will act as consultants. The total cost of the project is not known, but South Yemen has received a \$1.7 million loan from the Arab Fund for Social and Economic Development to pay for its share in the scheme. [Text] [Paris AN-NAHAR ARAB REPORT & MEMO in English 25 Jan 82 p 9]

CSO: 5500/4710

## AUTOMATIC TELEPHONE EXCHANGE OPERATIONAL IN ADDIS ABABA

Addis Ababa THE ETHIOPIAN HERALD in English 10 Feb 82 p 3

[Text]

**ADDIS ABABA (EH) —** The New Kera Automatic Telephone Exchange in Higher 20 has become operational as of January 23, 1982, according to the public relations office of the Ethiopian Telecommunications Authority (ETA).

The new exchange is one of the four exchanges to be constructed in Addis Ababa in line with ETA's Fifth Five year Development programme. The exchange was set up at a cost of 5,107,328 Birr.

The public relations office of the Authority further disclosed that the new exchange had initially 8000 lines which could be extended to 20,000 lines progressively over the life of the exchange in order to meet anticipated demand. Work on the exchange installation which began on October 17, 1980 was undertaken by the Authority's staff.

Two similar exchanges are operational in Addis Ketema and Bole areas it will be remembered. This brings the number of automatic telephone exchanges in the city to five including the two previously existing ones in Arada and Filwaha areas. The sixth such facility which is under construction in the old Air Port Area is expected to be operational later in the year, according to ETA.

The public relations office of the Authority further disclosed that there are around 40,000 telephone subscribers in Addis Ababa. The new automatic telephone exchanges will enormously alleviate such anomalies as tone delay, interference and congestion, it was added. They also help to cater to more subscribers.

CSO: 5500/5700

## EDUCATIONAL RADIO OPENED IN TIGRAI

Addis Ababa THE ETHIOPIAN HERALD in English 9 Feb 82 p 1

[Text]

**MAKALE (ENA)** — An educational radio transmission station built at a cost of over one million Birr in Tigray Region has been inaugurated near here.

The transmission station at the Inda-Yesus locality in the outskirts of Makale was inaugurated Saturday by Comrade Mulugeta Hagos, COPWE Central Committee member and COPWE representative for Tigray region, who stated that the radio station would be used to teach the masses, help raise the level of political consciousness and expedite social development. He urged the people to attend to and benefit from the educational programmes of the new radio transmission station.

Comrade Yihun-Belay Mengistu, Head of the Educational Mass Media Service of the Ministry of Education, on his part, stated that the radio station will acquaint the new educational curriculum and also contribute to the fostering of useful cultures and artistic heritages. He said that the station will be instrumental especially in enhancing the ideological consciousness of the people and develop their knowledge of science and technology.

Present at the inaugural ceremony were Comrade Fekadu Wakene, Chief Administrator of Tigray Region, Executive Committee members of the Regional COPWE and invited guests.

CSO: 5500/5700

## BRIEFS

AIRPORT TELECOMMUNICATION SYSTEM MODERNIZATION--The Department of Civil Aviation has started a £ 13.2 million (£2.2m) programme to install up-to-date telecommunication equipment at the country's airports. Under a contract signed last December, a British firm, Rediffusion Radio System is to replace all the department's obsolete telecommunication equipment at the various airports. And for a start, the installation of a modern 'single-side band' transmitter at the Kotoka International Airport is expected to be completed by Friday. Mr K. A. Kwaw, the department's director told the GRAPHIC yesterday that the installation of the transmitter was also in compliance with demand by the International Civil Aviation Organisation (ICAO) that the department should change its 'double side band' to single-side band by February 18, this year. Already the company has installed a Very High Frequency (VHF) tower at the airport, he said. The director disclosed that the single-bank transmitter was capable of accommodating five frequencies and would thus eliminate the complaints from pilots about the department's telecommunication system. The programme is being financed from the British Overseas Export Credit Guarantee scheme. The bulk of the equipment is expected to arrive within six months while the programme should be completed by the end of the year. [Text] [Accra DAILY GRAPHIC in English 9 Feb 82 p 8]

CSO: 5500/5695

## BRIEFS

EXPANDED TELEPHONE SERVICE--The Kenya Posts and Telecommunications Corporation will spend Shs. 58 million for the expansion of telephone and telegraph projects at the Coast during 1982/83. This was said yesterday by the corporations chairman, Mr Dawson Mulamba, who had led members of his board on a tour of the corporation's installations in Kwale. The team, which was also accompanied by the Managing Director, Mr Kipng'eno arap Ngeny, visited the Shs. 1.5 million Lungalunga Post Office just completed. Mr Mulamba said projects to be implemented included the replacement of a 1,000-line exchange with a new 3,000-line exchange of a cost of Shs. 6 million. In the expansion programme, the chairman said the 678 line Nyali exchange would be replaced with a modern 2,000 line exchange with STD facilities while at Changanwe the 1,000 line exchange would be increased to 3000 lines. [Text] [Nairobi THE STANDARD in English 13 Feb 82 p 9]

NEW STD LINK--The Chairman of the Kenya Posts and Telecommunications Corporation, Mr Dawson Mlamba, yesterday said new STD telephone exchange equipment for Malindi will arrive at Mombasa early next week and its installation will begin on May 1. Speaking after making an extensive tour of Kilifi, Mr Mlamba said the Malindi manual telephone exchange would have 1,000 automatic lines. [Text] [Nairobi THE STANDARD in English 12 Feb 82 p 9]

CSO: 5500/5701

MALI

BRIEFS

NEW TRANSMITTERS INAUGURATED--Starting yesterday, Radio Mali has a mediumwave transmitter along with two frequency modulation transmitters. The new medium wave transmitter has a power of 100 kilowatts at night. It is located on the road to Kati and will be transmitting on 555 meters while the two fm transmitters, located in a room at the Hotel de L'Amitie, are transmitting on 87.6 megahertz and 91.6 megahertz. They only cover the area of Bamako. [AB261729 Bamako Domestic Service in French 1500 GMT 26 Feb 82]

CSO: 5500/2131

FURTHER DISCUSSION OF NEED FOR BROADCASTING POLICY

Lagos SUNDAY TIMES in English 24 Jan 82 p 5

[Article by Nsikak Essien]

[Text] A few weeks ago President Shehu Shagari presented a bill to the National Assembly which seeks to restructure the Federal Radio Corporation of Nigeria (FRCN), the premier broadcasting institution in Nigeria.

The bill seeks to create a federally-controlled radio station in each state of the Federation.

According to the Presidential Adviser on Information, Chief Olu Adebajo, the proposed new structure will make the impact of the Federal Government felt more than before in every state of the Federation.

There are presently four zones of the FRCN covering the whole country with operating bases at Lagos, Zaria, Kaduna, and Enugu. [as published]

A few days ago the NEW NIGERIA newspaper carried an editorial which was refuted by Chief Olu Adebajo, that the bill sought to restrict short wave radio broadcasting to the federally controlled FRCN.

This reawakened an old controversy which started in 1977 about banning state-operated stations from broadcasting in the short wave band.

At the end of the controversy a Federal commissioner in the military administration lost his job and a state military governor was reassigned.

This article seeks to give some hard scientific facts about short wave, medium wave (AM) and VHF (FM) broadcasting and how each of them can be used to achieve political aims.

It is hoped that these facts will assist the National Assembly in framing a national policy on radio broadcasting that will serve the generality of the Nigerian people.

Presently, all states of the Federation have a radio broadcasting authority which transmits in the medium wave band. A number of them too have short wave transmitters and hence can beam their radio signals in the short wave band.



Since the former Nigerian Broadcasting Corporation (NBC), now Federal Radio Corporation of Nigeria (FRCN), introduced the first FM radio broadcast through Radio Nigeria Two and an FM channel in the mother station, Radio Nigeria, Ikoyi, a number of states have also introduced FM stereo broadcasting stations.

Medium wave (amplitude modulated, AM) broadcasting has the advantage of covering a large area of just tolerable unwanted noise in the main transmitted signal. This is perhaps why it has survived till today in many parts of the world especially in the developed nations where there is sufficient money to implement any sophisticated broadcasting system.

Another advantage is that the medium wave band is not as crowded as the short wave band and hence the required broadcasting goal can be achieved.

This goal is that of conveying information with minimum interference and optimum clarity. [as published]

However, it has the disadvantages of poorer quality of speech and music, than FM as well as high noise level coming from components of the broadcasting system.

Short wave (SW), amplitude modulated (AM) radio broadcasting has a host of disadvantages which include difficulty of tuning to the station, because of overcrowding of stations within a narrow limit, fading of the received signal resulting in fluctuating level of reception and hence causing the listener to strain his ears to get the transmitted message.

Take for instance the 49 and 51 metre bands popularly used for middle range coverages.

These two metre bands are used by almost every radio station with a separation of a few frequencies such that at peak broadcasting times such as early morning and early evening, it is extremely difficult to engage a desired station.

Most local stations are drowned by BBC (world services), VOA (Voice of America) and Radio South Africa (RSA), because of the high radiating power of their transmitting systems.

Some people may ask, why are these renowned stations still transmitting in the short wave region?

This is because they have no alternative until technology helps them out someday, but where they have the alternative they discard the short wave system.

An example is, some four months ago the Voice of America (VOA), established a medium wave transmitting station in South Africa to relay all their programmes in the medium wave frequency to cover some parts of Southern Africa.

The West African subregion is covered by BBC in the 49 metre band by their Atlantic relay station, while VOA achieves their West African coverage in the same 49 metre band with a relay transmitter in Monrovia, Liberia.

Before putting forth my proposals for a new radio broadcasting policy, it might be helpful to analyse the broadcasting system in Britain.

Although, Britain is much smaller than Nigeria, there is no short wave transmission meant to cover anywhere in the country. BBC, the largest broadcasting organisation in Britain has four channels (BBC 1, through BBC 4), which covers the whole country in both MW (medium wave) and VHF(FM) with the help of repeater stations strategically located all over the country.

These apart there are also local BBC and IBC (Independent Broadcasting Authority) stations located in every major town and they beam their transmissions in only medium wave and VHF (FM) bands.

There are a number of advantages in this system. Any of the four BBC stations broadcasting from London is received clearly and with good quality anywhere in the country.

It is pertinent at this point to state the advantages of VHF(FM) broadcasting and to show why everybody is changing over to this system. It provides the best quality speech and music obtainable in any broadcasting system.

It is free from interference from unwanted noise sources. It is also free from interference of other radio broadcasting stations, because of its large transmission band (i.e. 88-108 MHz) and hence can accommodate many stations comfortably.

Lagos area listeners to Radio Nigeria 2, might dispute this last point. I understand reliably that the interference in their broadcast comes from another radio communications user who obtained the same link frequency, because someone defaulted in his duty.

I believe this has been settled now, because I hardly hear any interference any longer. The VHF(FM) broadcasting has a disadvantage of covering a smaller area, but repeater stations have eliminated this problem, although they increase the capital and maintenance cost.

The FRCN should discontinue short wave broadcasting meant for local listeners, but should use repeater stations for both MW and FM channels to cover the whole country.

The FRCN should cover the whole country with at least two nationally-directed programmes with one channel, mainly reserved for entertainment under the Radio Nigeria Two structure.

There should also be a federally-controlled local radio station in each state to cater for state/Federal interests.

Any state radio station may broadcast in the short wave band if it likes, but as far as I have seen very few people take all the trouble to tune to a far-away state radio station, because of the problems and unreliability of broadcasting, due to atmospheric conditions.

CSO: 5500/5694

## NIGERIA

### BRIEFS

ABUJA TELEVISION--The Nigerian Television Authority's latest station, NTA Abuja will be opened today at Suleja. The President of the Senate, Dr Joseph Wayas, will perform the opening ceremony. He will be assisted by the Special Adviser to the President on Information, Chief Olu Adebajo, as well as the Director-General of the NTA, Mr Vincent Maduka. Governor Awwal Ibrahim of Niger State, will be a special guest. The ceremony will start at 10 a.m.  
[Text] [Kaduna NEW NIGERIAN in English 27 Jan 82 p 1]

CSO: 5500/5684

## BRIEFS

OFS START--The TV2/TV3 transmitter at the Theunissen Station (OFS) will start with full-time transmissions next Monday, the SABC announced yesterday. [Text] [Johannesburg THE CITIZEN in English 23 Feb 82 p 11]

RADIO SERVICE FOR INDIANS--It was hoped to launch a radio service for Indians in Durban and surrounding areas early next year, the Minister of Information, Mr Pik Botha, said. Replying in writing to Mr Dave Dalling (PFP Sandton) Mr Botha said requests for more programmes were received from time to time from the Indian community. Just over six hours a week were presently devoted to programmes of special interest to Indian listeners. Indians did, however, participate in and contribute to numerous other programmes. Programmes broadcast in the official languages, including news and actuality programmes, were not directed at any group in particular and were of just as much interest to Indian listeners as to any other population group, the Minister said. The SABC had already approved the planning of a radio service for Indians in the Durban area. Certain technical problems still had to be overcome but good progress had already been made with the planning of the proposed service, which would hopefully be launched early in 1983. [Text] [Johannesburg THE CITIZEN in English 23 Feb 82 p 4]

TELE-COMPUTERS FOR ELECTION--Mr Clive Derby-Lewis, a former mayor of Bedfordview who will be standing as a candidate for the Independent Ratepayers' Association in the forthcoming municipal election on March 3, boasts a number of computers to assist him in his campaign. The computers can be fed a programme of up to 999 telephone numbers which they will dial unattended before passing on a pre-recorded canvassing message. The computers, which carry a voice activating system, are capable of handling any queries. It is the first time such tele-computers have been used in South Africa. Such techniques have already proved successful in election campaigns in the United States. [Text] [Johannesburg THE CITIZEN in English 25 Feb 82 p 5]

CSO: 5500/5699

## SWAZILAND

### BRIEFS

SWAZIS TO BUY TV CORP--Mbabane.--The Swaziland Government has set aside R2,2-million to buy the privately owned Swaziland Television Broadcasting Corporation. A report in the TIMES OF SWAZILAND quotes supplementary estimates which have been approved in Parliament and says that negotiations for the sale of STB have been going on since early last year. STBC is owned by a London-based company, Electronic Rentals. It is reported that since it was formed in 1978, the STBC has never made a profit. Further reports say STB has threatened the Government several times that it would close down unless the company was met halfway with financial costs. It was not immediately revealed when the final transaction would be made.--Sapa. [Text] [Johannesburg THE CITIZEN in English 23 Feb 82 p 11]

CSO: 5500/5696

## OPTICAL CABLE COMMUNICATION LINKS

Moscow VESTNIK SVYAZI in Russian No 11, Nov 81 pp 24-26

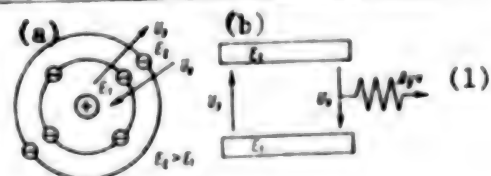
[Article by G. I. Grodnev, engineer]

[Text] The "Basic directions of the economic and social development of the USSR for 1981-1985 and up to 1990", confirmed by the 26th CPSU Congress, has the following provision: "assimilate series of new types of fiber optic communication cables". This is an extremely urgent problem, since the production of ordinary electrical cables require a great deal of copper and lead, and the reserves of these metals in the worldwide balance are extremely limited. Our cable industry consumes up to 50% of the copper and 25% of the lead from all of the country's resources. It has recently become possible to replace the lead used for cable shields with aluminum, steel and polyethylene. However, there is yet no totally satisfactory replacement for copper conductors, and the requirements for copper are increasing: there are provisions to increase the number of channel-kilometers of long-distance communications by a factor of 1.8 during the 11th Five-Year Plan, and 75% of this must use cable links. The creation of fiber-optic cables will provide a radical solution to the problem of replacing copper in cable production.

This article examines the process of transmitting energy over an optical fiber and explains the physical phenomena which are opening the way to replacing copper with glass in communication cables.

N. G. Basov and A. M. Prokhorov, creators of the optical laser quantum generator, Soviet scientists and Academicians, laid the foundation for the development of optical transmission systems. The operating principle is based on the emission by the atoms of matter under the influence of an external electromagnetic field of light quanta, or photons.

Figure 1. Laser operating principle. Key: 1, beam.





An atom of any substance (Figure 1a) consists of a positively charged nucleus and negative electrons rotating in their own orbits. The higher the orbit, the greater the electron energy ( $E_2 > E_1$ ). If electrical voltage disturbs the atom and electrons are forced into a higher orbit, when they return to their previous orbit quanta of light — photons — are emitted. Electrical energy is thus expended (pumping energy  $U_e$ ) and light energy is obtained (photon flux  $U_0$ ) (Figure 1b). This flux, passing through a resonant system of mirrors, is amplified, thus resulting in a highly directional laser beam.

Various types of lasers are now known: semiconductor, solid-state, gas and others. A semiconductor laser (Figure 2) is a p-n semiconducting diode made of luminescent material capable of emitting light quanta or photons. Gallium arsenide with appropriate admixtures (tellurium, aluminum, silicon, zinc) are used mainly for this type of luminophor. The luminophor is excited by applied voltage, the carriers recombine and a photon flux — the laser beam — appears. Laser radiation differs from ordinary light, which represents chaotic photon movement, in that it is strictly phased and coherent, i.e., the movement of the light particles — photons — is matched in time and space.

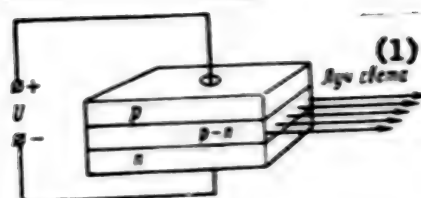
A laser beam has a number of remarkable properties: it propagates over long distances, has strictly rectilinear direction with low divergence, and can carry a huge amount of information. Laser systems ordinarily use the visible spectrum of the optical band ( $10^{14}$ – $10^{15}$  Hz) which corresponds to micron wavelengths.

In its simplest form, a glass fiber or optical cable used to carry a laser beam uses a two-layer construction (conductor-jacket) with different refraction indexes. The beam moves along the fiber and is reflected in zig-zag fashion (repeatedly) from the conductor-jacket boundary (Figure 3a). In order to prevent the radiation of energy through the jacket into the environment, the beam is directed toward the end of the cable at an angle of  $\phi$  which is greater than the total internal reflection angle ( $\sin \theta = n_2/n_1$ ). When  $\phi > \theta$  (Figure 3b), there is only the reflected beam: there is no refracted beam, consequently, no energy is radiated into the environment, and all of the transmitted energy propagates efficiently along the fiber conductor. The quality and range of transmission depend on the transparency of the glass, i.e., the losses in it. The optical fibers which are now being manufactured have an average attenuation of about 5 dB/km. Developmental optical cables with fiber attenuation of 0.5 dB/km exist.

The basis of optical communications (Figure 4) is thus provided by an optical cable. The radiation source is either a semiconductor laser L or light-emitting diode SD, and the receiver is a photodiode FD. At the input to the optical cable, the electrical signals are converted to optical, and re-converted to electrical at the output. The primary system used for optical cable transmission is a digital PCM system. Systems with 30, 120, 480 or more channels are used.

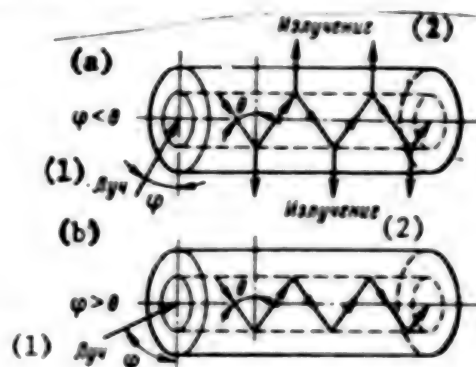


Figure 2. Diagram of semiconductor laser. Key: 1, light beam.



Besides saving copper, other advantages of optical cable include their bandwidth and the capability of transmitting a large stream of information ( $10^4$ - $10^5$  channels), low attenuation and frequency independence over a wide frequency range. Optical cable attenuation at a wavelength of  $0.85 \mu\text{m}$  amounts to 5 dB/km. Investigations have established that when a wavelength of 1.3-1.7 is used the attenuation can be reduced to 0.5 dB/km, i.e., the distance between regenerators can be increased to 80 km; in addition, optical cables are small and light in weight (optical cable weighs 10 to 12 times less than electrical cable), and they are suitable for installation underground.

Figure 3. Transmission over fiber light guide: a - radiation present ( $\phi < \theta$ ), b - radiation absent ( $\phi \geq \theta$ ). Key: 1, beam; 2, radiation.



The high cost of production is a shortcoming of optical cables. However, as this technology is mastered the cost of optical fiber should soon drop by a factor of 10.

Optical cables have begun to be used primarily for city automatic telephone exchange trunk devices, where they replace extremely metal-intensive electrical cables. Several optical cable lines are already in operation in the USSR in IKM-30 and IKM-120 transmission systems (Moscow, Gor'kiy, Leningrad). There are plans to construct optical cable lines in other cities here during the 11th Five-Year Plan.

In the future, optical cables should be used in zone and backbone communications networks.

An optical cable is constructed of one or several light guides (fibers) arranged or twisted in a certain manner and covered with a protective plastic jacket. Reinforcing elements are often included in the jacket or center of the cable, which increase the breaking strength of the construction significantly.

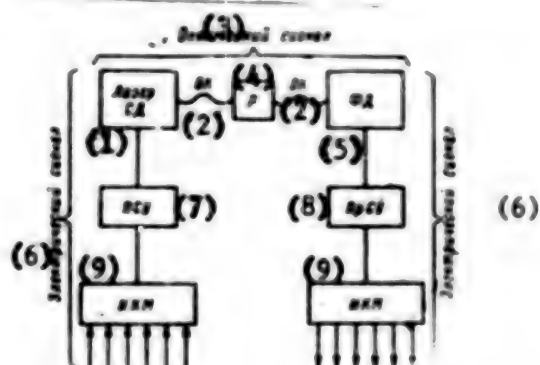
Fiber light guides exist with a discontinuous profile (abrupt variation in the coefficient of refraction) and gradient fibers (in which the coefficient refraction changes continuously, most often parabolically).

Low energy losses and low dispersion distortions are important requirements imposed on light guides. These properties are present in alloyed quartz glasses,

multi-component silicate glasses and transparent polymers. However, the use of quartz glasses provides the best results.

A two-layer quartz fiber is obtained by chemical precipitation of silicon oxide on the outside surface of a quartz tube (jacket) from the gaseous phase at a temperature of 600-800°C. In order to obtain a smooth or abrupt change in the index of refraction of the blanks, borium, phosphorus or other compounds are added to the silicon pairs during defined stages of precipitation. The blanks are then pressed into a bar and a fiber of the required diameter is drawn from it. In order to increase the mechanical strength and to provide protection against outside influences, a plastic coating of polyamide, fluoroplastic or polyethylene is put on the fiber.

Figure 4. Functional diagram of optical communications:  
1 - laser/light emitting diode;  
2 - optical cable; 3 - optical signal; 4 - regenerator; 5 - photodiode; 6 - electrical signal;  
7 - transmit interface; 8 - receive interface; 9 - PCM.



The last meeting of International Electrotechnical Commission subcommittee 46E in October 1979 adopted coordinated resolutions to standardize the following geometric parameters of fiber light guides: conductor  $50 \pm 3 \mu\text{m}$ , jacket -  $125 \mu\text{m}$ , protective coating -  $200 \mu\text{m}$ .

Reinforcing elements which provide protection against mechanical stretching loads, and in some cases prevent shrinkage of plastic coatings, can be placed within the cable, or around it. Reinforcing elements which are used include both metal (aluminum, steel) and high strength braided synthetic materials (nylon, Kapron, etc.).

The exterior jacket used in optical cables are mostly of two-layer construction: first an absorbing envelope of porous plastic is put into place, and then the outside jacket, usually polyethylene. Aluminum corrugated jackets with a protective polyethylene tube are also used.

A large number of different optical cable designs have now appeared around the world. In principle, they can be classified into the following three groups: traditional twisted-layer cables (Figure 5a); cables with a shaped plastic core with the optical fibers arranged around it (Figure 5b); and cables with flat construction consisting of stacks of strips containing fibers (Figure 5c).

Cables with shaped cores are used most widely in European countries. Flat cables made of stacks of strips, each containing between 6 and 12 optical fibers are used in the US. Japanese designs are also of interest. The gradient fiber they have created has low continuation and allows communication over a distance of 80 km without amplifiers.

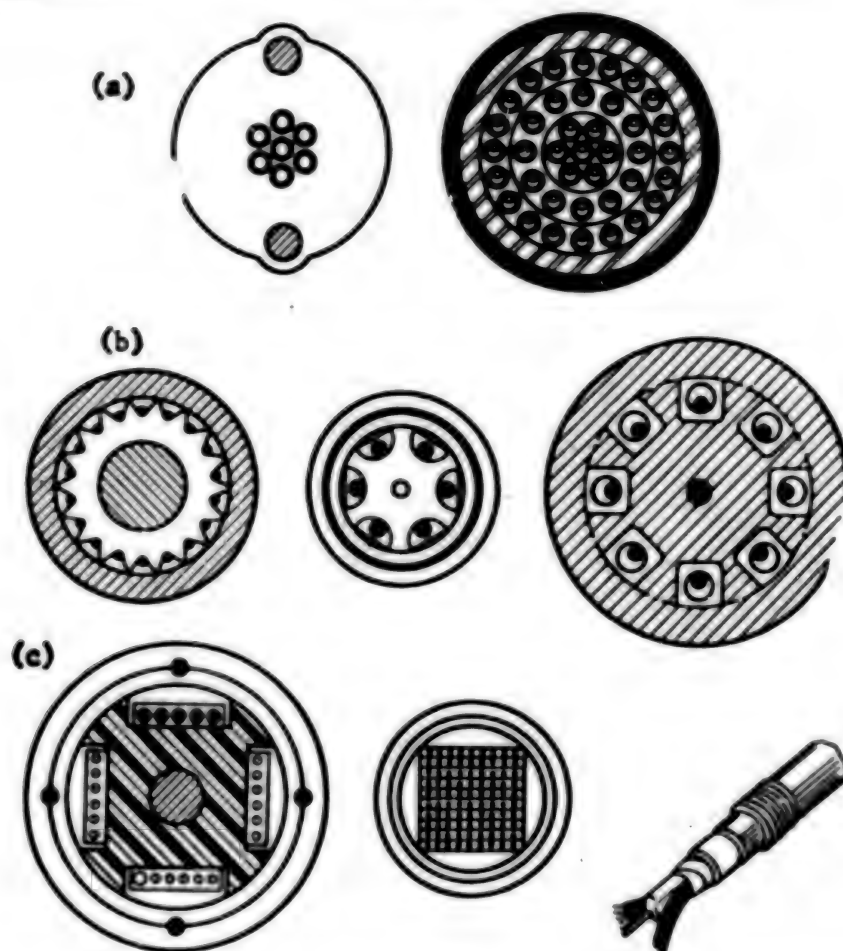
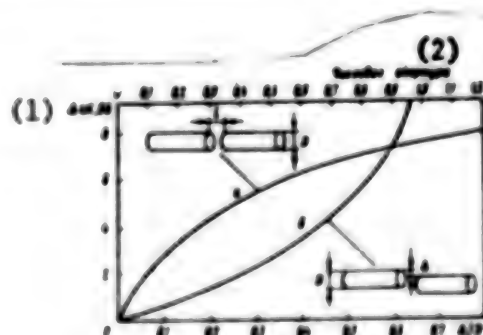


Figure 5. Optical cable construction: a - twisted layers; b - use of shaped core; c - flat construction.

Figure 6. Influence of gap (a) and lateral displacement (b) when splicing fibers. Key: 1, dB; 2, numerical aperture.



The installation of optical cables is one of the most important tasks involved in their utilization. Many different ways have appeared in recent years for joining structural cable lengths. These methods can be divided into two groups: stationary and operational installation. Stationary installation is used for cables intended for long-term operation, while operational is used for mobile reusable cables, where structural lengths must be connected and disconnected repeatedly.

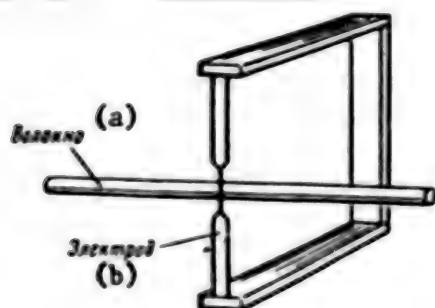


Figure 7. Electrical arc welding of fibers. a - fiber; b - electrode.

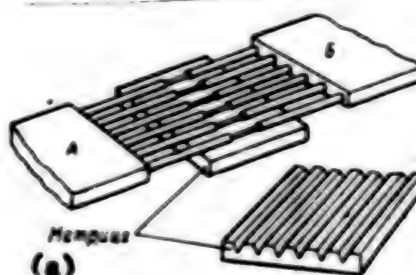


Figure 8. Arrangement of flat optical cables. a - matrix.

The main requirements for connecting devices are simplicity of construction, low transient losses, resistance to external mechanical and climatic effects and reliability. When connecting fibers they must be kept strictly coaxial, the geometry of their ends must be identical, and the ends must be perpendicular with respect to the optical axes of the fibers.



Figure 9. Plug connector  
a - fiber; b - plug; c - plastic sleeve.



Figure 10. Capillary connection.



Figure 11. Use of heat-shrinkable tubing: a - original position; b - after heating; c - cable.

As Figure 6 indicates, end-to-end misalignment causes significant additional losses, and a gap between the fibers has a significant influence on the quality of the junction. The use of a matching medium between the ends of the fibers which has a coefficient of refraction different from that of the fiber core reduces significantly the quality of the joint.

The fiber ends are prepared by spalling and polishing them. The fibers are trued with the help of plastic tubes having the same inside diameter as the fibers being connected, or using a plastic matrix with V-shaped grooves which hold the fibers.

Electric arc welding is one method of stationary mounting (Figure 7). Nichrome electrodes are used for this purpose. A high voltage electric arc welds the ends of the fibers within two seconds at a temperature of 1000-1500°C. The junction losses are between 0.1 and 0.3 dB. The strength of the joint is 70% of that of a whole fiber.

In installing a flat optical cable (Figure 8), the fibers of the twisted ends of cables A and B are laid in the grooves of a matrix and filled with epoxy resin.

Plug-type connectors - mechanical joints which allow the construction lengths to be joined and separated - are used most extensively for operational installation. Analogous constructions are also used to connect cables to equipment. There now exists a large number of varieties of plug connectors, the most common of which is shown in Figure 9.

The following simple version of connecting fibers is of interest (Figure 10). A glass capillary with a melting temperature lower than that of the fiber is taken. The fiber with its prepared end is inserted in the capillary and held in place by locally heating the capillary and shrinking it about the fiber. Then the other fiber is inserted in the other end of the capillary and held in place with a special adhesive.

It is recommended that splices be sealed and protected with heat-shrinkable polyethylene tubing. This tubing is able to shrink in diameter when heat is applied, which produces a solid sealed jacket for the cable (Figure 11).

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CSO: 5500/1014



## ADM-2.5 HIGH PERFORMANCE RADIO RELAY ANTENNAS

Moscow VESTNIK SVYAZI in Russian No 11, Nov 81 p 49

[Article by Yu. A. Yerukhimovich, candidate of technical sciences, senior scientific worker at NIIR: "Set of radio relay antennas"]

[Text] The AMD-2.5 antenna belongs to a series of high performance axial symmetric twin reflector antennas for radio relay communications which have been developed by a collective of workers at the USSR Ministry of Communications State Scientific Research by Institute of Radio. These antennas are now in series production. The antennas in this series have radiating aperture diameters of from 1 to 5 m and are designated, respectively, as follows: ADE-1; AMD-1.75; AMD-2.5; ADE-3.5; ADE-5. All of these antennas are based on a new plan with a displaced focal axis of the parabolic generatrix. A number of USSR patents are used in their construction (for example, No 237 934, 316 357, 280 574, 645 484, et al.), which made it possible to provide good electrical parameters and design characteristics.

A number of new technological processes and materials are used in producing the antennas: electroforming of thin layers of metal followed by strengthening with plastic foam; a radio transparent system used to fasten the secondary reflector on the horn, which also seals the feeder; pressure casting; ordinary and metallized fiberglass, etc. Under ordinary conditions, the antennas do not require external protection by raincoats or covers. The removable protective enclosure is provided for especially difficult climatic zones.

The operating ranges of the antennas cover the entire span of frequencies used for radio relay communications - from 2 to 12 GHz. The antennas have a high coefficient of surface utilization -  $K_{su} \leq 0.7$ ,  $SWR \leq 1.06$ , protective action of at least -65 dB, and lowest level of cross-polarization field at least -30 dB.

The directivity patterns satisfy the specifications of the SSIR reference patterns for high performance antennas. Operation is possible on two respectively perpendicular linear or two orthogonal field polarizations and in two adjacent radio frequency bands simultaneously. The AMD-2.5 antenna (cf. figure) is designed primarily to operate in the "Oblast" communications system in the 8 GHz range.



AMD-2.5 radio relay antenna.

Of all other types of antennas with displaced focal axis of the ADE and AMD type, these have, for the same gain, the smallest size and weight, greatest adaptability to manufacture and production economy, as well as good operating characteristics.

The AMD-2.5 and ADE-5 antennas have been given the State quality seal. The external appearance of the antenna is protected by industrial patents No. 7115 and 10681.

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CSO: 5500/1014



## USE OF 'KONTEYNER' RADIO RELAY LINK IN REGIONAL NETWORK

Moscow VESTNIK SVYAZI in Russian No 11, Nov 81 pp 30-31

[Article by P. M. Medyanik, chief of State Inspectorate of Electrical Communications of Checheno-Ingushskaya ASSR PTUS]

[Text] The least reliable link in the Unified Automated Communications System today are the rural regional networks, where only one type of communications facility is used on many links (cable or overhead line). The reliability of an overhead line depends on the level of protection against mechanical damage in regions where agricultural or other excavation operations are conducted. Furthermore, the severe shortage of cable production and towers is retarding the rates of development of regional networks. Under mountainous conditions, this is aggravated by the extreme difficulty in selecting routes for cable and overhead lines.

The Production-Technical Communications Directorate (PTUS) of the Checheno-Ingushskaya ASSR began in 1976 to introduce the "Konteyner" radio relay equipment in regional networks, first as the basic type of communications, and then to increment and provide backup for existing cable or overhead lines.

Five years of experience in operating the "Konteyner" equipment under mountainous conditions have demonstrated good performance of the channels which are organized and better reliability than other types of communications.

Before this equipment began to be put in place, it was decided to concentrate the "Konteyner" within a single enterprise - the RRTPTs [expansion not given]. This made it possible to accumulate experience in operating the equipment and to train qualified specialists who know how to overcome many of the difficulties involved in setting up radio relay links and calibrating equipment under both laboratory and field conditions.

When the "Konteyner" radio relay equipment is used on intra-regional links, the interval length is between 10 and 25 km. In order to organize stable communications over such intervals, path clearance of 4-7 m is quite sufficient. This clearance can be provided with an antenna height on the order of 20-25 m. The directivity pattern of the phased antenna array used is on the order of 15-20° in both the vertical and horizontal planes. This has made it possible to use inexpensive high-voltage towers of type SK-7 of SK-4A (high voltage conical support) 26 m high,

which are not particularly rigid. The mechanical strength of this support allows it to accommodate a 1.5 x 1.5 m platform on top (of the projector variety) and an antenna support in the center which enters the "Konteyner" set. An enclosed metal ladder is fastened to the side of the tower (Figure 1).

The tubular antenna support supplied for "Konteyner" repeater stations consists of two sections: the bottom section is fastened "blind" to the support, while the top section can be rotated freely. The antennas are fastened in one direction to the top part, and in the other direction to the bottom. In order to align the antennas fastened to the fixed part we have developed a special strap and flange arrangement which, when released, allows the antenna to move freely on the bottom part of the support pipe. A second antenna is also connected to this flange.



Figure 1. Construction of "Konteyner" antenna.

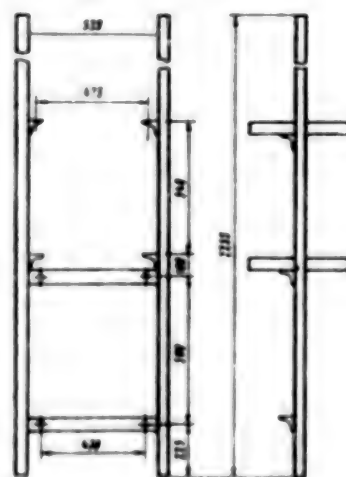


Figure 2. "Konteyner" equipment rack.

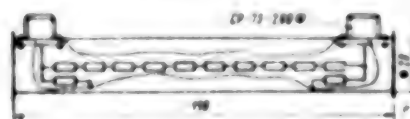


Figure 3. HF line equivalent.

The dimensions of the radio relay equipment do not correspond to the standard dimensions of line equipment room equipment; therefore, we fabricate special racks of 75 x 75 angle iron (Figure 2) which can accommodate two terminal or one intermediate "Konteyner" stations and a single type VB-24/6 rectifier for their power supply. Equipment held in this rack installed in a row with other equipment is convenient to service, and fits well in the line equipment shop.

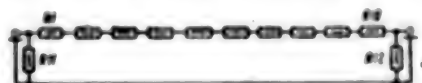
The manufacturing plant usually equips the antenna feeder cable with a high frequency connector which connects the cable perpendicularly to the front panel of the antenna filter unit, which interferes with the passage of service personnel. We have replaced this connector with an elbow. The feeder cable now runs upward and is fastened to a cable rack, from where it goes on to the antenna.

In order to align the A- and B-stations radio relay and AU multiplexing equipment under laboratory conditions, an HF line equivalent was fabricated of copper tubing 20 mm in diameter and 150 mm long (Figure 3). The tubing contains an electrical attenuation circuit of ten-megohm resistors in series. This network is soldered to type SR-75-290F connectors, 75 ohm resistors are connected in parallel to the ends of the line (Figure 4) and the network is placed inside the tubing. This equivalent has 35 dB attenuation; according to laboratory tests its traveling-wave ratio is between 0.85 and 0.90 through the 390-470 MHz range (according to the technical specifications for the "Konteyner" equipment, the traveling-wave ratio of the line must be at least 0.7).

Since the signal attenuates by 70-90 dB over the propagation path, 2 to 3 such equivalents are used for laboratory testing of radio relay equipment: these are connected directly by means of cable jumpers to the antenna connectors of both radio relay stations in one interval.

According to the technical specifications for the "Konteyner" radio equipment Zh'II.105.000/002-TU, main stations are produced only with the suffix VN (with receive frequency higher than transmit frequency). If a "Konteyner" DM-400/6 or DM-400/32 with suffix NV is already in place at the location where the radio relay equipment is being installed, the new equipment can be reconfigured for the suffix NV to ensure electromagnetic compatibility. In order to do this, it is sufficient to switch the transceivers and antenna filters on the radio relay link interval between stations A and B without any changes in the structure of the equipment, levels, etc. This limitation which the technical specifications impose on the equipment is obviously unjustified, especially since repeater and terminal stations are being produced with this suffix.

Figure 4. HF line equivalent where  
R1-R16 - 10 megohms; R11-R12 - 75 ohms.



The frequency plan of the "Konteyner" equipment allows 6 routes to be organized. Since routes I and III, II and IV have incompatible image channels at a single point, only 4 routes can be organized. If the tandem junction at an oblast center requires more routes, it is possible to install "Konteyner" equipment on any 2 routes with the same pairs of frequencies at the main stations, connecting the first trunk to one route and the second trunk to the other. However, this scheme, which provides no backup, can only be used to duplicate some other link.

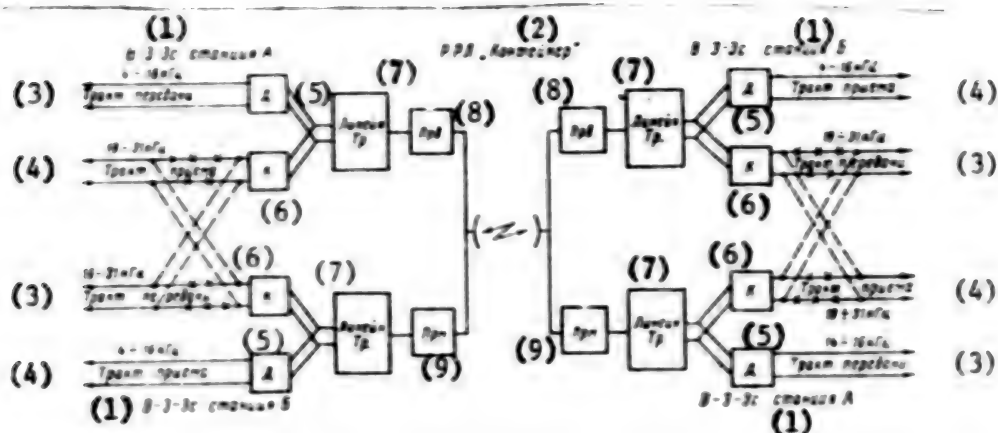


Figure 5. Connection of two V-3-3s transmission systems to a single "Konteyner" equipment trunk. Key: 1, V-3-3s station; 2, "Konteyner" radio relay link; 3, transmit circuit; 4, receive circuit; 5, [not explained]; 6, sealed reed relay; 7, line transformer; 8, transmitter; 9, receiver.

Difficulties have now arisen in the delivery of type OR-6 transmission systems: only 40% of the PTUS requirement for this equipment is being satisfied. Therefore, "Konteyner" radio relay equipment is not used at full capacity (a total of one trunk for every 6 channels) or is used without any transmission systems. In these cases, a single trunk can accommodate two type V-3-3s transmission systems, which makes it possible to obtain 6 voice grade channels (Figure 5). The psophometric noise level in the telephone channel of a two-span radio relay link multiplexed with 2 V-3-3s systems is 3 to 4 times lower than the OR-6 equipment; the cost of 4 V-3-3s racks is 5220 rubles lower than for OR-6 racks (in the version which provides 6 audio frequency channels).

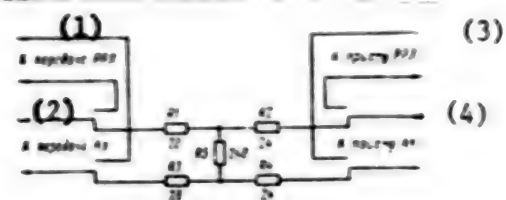
If the OR-6 multiplexing equipment is placed immediately adjacent to the ATSK [Crossbar-type telephone exchange] and the impedance of the signal channel circuit is less than 1 kilohm, current on the order of 120 to 130 mA passes through the contacts of sealed-reed relay K in the SK-2 module, which causes the contacts to stick, and sometimes causes the relay to break down. In such cases, we connect additional resistance of the order of 120-390 ohms in series with the relay contact circuit. The optimal value of this current is 70-80 mA.

In the first models of the OR-6 multiplexing rack, the VTSP [expansion not given] table from the radio relay equipment was connected "hermetically". When checking the multiplexing equipment working "into itself", the cable had to be unsoldered in order to load the equipment into an equivalent. Our rationalizers installed two switches and an attenuator on the removable cover of the OR-6 rack (Figure 6). For convenience, the knobs of these switches can be connected mechanically by a jumper, or a wafer switch can be used.

The circuit of the low-frequency amplifier unit SS in the OR-6 rack provides full-time loudspeaker communications, for which the volume control only partially reduces the volume: this disturbs the work of service personnel in the shop.

In order to eliminate this effect, a switch has been installed in low frequency amplifier module SS which turns off the loudspeaker and simultaneously loads the low frequency amplifier to a 5-ohm resistor.

Figure 6. Connection of attenuator.  
1, to radio relay transmission; 2, to multiplexing equipment transmission;  
3, to radio relay reception; 4, to multiplexing equipment reception.



On the whole, 5 years of experience in operating this equipment has demonstrated good operating qualities.

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6900

CS0: 5500/1014

## BRIEFS

SATELLITE LINK WITH FAR EAST--In 3 months Cyprus gets a new earth-satellite station connected to the Indian Ocean telecommunications satellite. The new station will cover the Far East, South East Asia, Australia, New Zealand, Indonesia and India. The station will have telephone and television links with the satellite. Some of the equipment has come and work has started and should be completed by next June. The existing Makarios station at Kakoratzia is connected with the Atlantic Ocean [by] the satellite. Officials told the "Cyprus mail" that the cost of the new station will be about 1 million Cyprus pounds which will be paid off in 3 years. The equipment is supplied by a French trading house which submitted the lowest tender. Other tenders came from the UK, USA, Canada, Japan and Italy. The new station will have a dish 22 ft in diameter and although its capacity will be 60 channels, it will start operating on 30 channels. The first satellite station, opened in October 1980 is now operating very successfully, officials said. Makarios station is of American design and cost 3.25 million Cyprus pounds. It's dish is 100 ft in diameter and its maximum capacity is 300 channels. Until now only 85 circuits have been filled. This station covers Atlantic shore countries, in Europe, Africa and America. [Excerpt] [NC260900 Nicosia Cyprus MAIL in English 26 Feb 82 p 3]

CSO: 5500/2131

LOCAL BROADCASTING ON RADIO, TELEVISION TO START

Helsinki HUFVUDSTADSBLADET in Swedish 20 Jan 82 p 6

[Text] The radio and TV monopoly in Denmark, discussed for years, will now be broken, although at the beginning only as an experiment, but it is, however, a beginning. The government has in the interest of being democratic appropriated 3 million kronor for the establishment of small local transmitters for groups which consider themselves wronged by the monopoly system.

Slightly more than 80 groups have requested space in the proposed local broadcastings. The model is Swedish, where there is local radio broadcasting; in Denmark it will involve both radio and TV. Many countries on the continent have similar radio and TV transmitters. Different cultural interests, municipalities, and also some economic interests will now be able to be heard and seen in the ether.

Local radio and TV have nothing to do with the regional programs. These exist in Denmark--as they do in Finland. In the case of the regional programs it is a question of allocation of time on the government monopoly channels, a splitting up, actually, of one program which is normally transmitted to several local channels, all within the framework of the direction, economy, and journalistic arranging of the monopoly. Instead, the intention is that outsiders will be able to present opinions requested by groups. These are groups which feel they have not received enough time on national radio.

These groups include municipalities which want to transmit their local political meetings, cultural groups, for example, experimental theater groups, Christian groups which feel that religion is unjustly treated on national radio, lesbian and homosexual associations which feel that they have not had their say, environmental groups, sports associations and others. One town on Jutland has indicated an interest in their own news program, because the TV news of the government monopoly is too Copenhagen oriented.



## Yes in Principle

The Folketing has in principle said yes, although on the condition that the programs are censored by the Ministry of Cultural Affairs, so that not just anything is transmitted. The economy is, however, a problem: the Ministry of Cultural Affairs, to which radio and TV belong, has appropriated the first 3 million kroner, but that will not go far. Some municipalities have offered to pay by themselves, if they can have the right to set up their own transmissions. But the Ministry of Culture has denied this; it could favor the politics of the majority in the municipalities in question. The Ministry of Cultural Affairs is, however, very interested in all the municipalities in the country joining together in order to jointly put up an additional 3 million kroner. But many municipalities feel they cannot afford this.

## No Commercials

Funds can naturally be collected privately in case some interest group is strong enough to want to invest money, but this has, for the time being, not been the case. Financing through commercials will not be allowed; there are no commercials today on either radio or TV in Denmark.

Politically, the idea has met with some skepticism from those quarters where there has always been resistance to the abolition of the national radio monopoly. Among others, the Social Democrats, who are in power, strongly support the idea of a monopoly. On the other hand, this is a democratic initiative which one wants to give a try.

9843

CSO: 5500/2096

## STATE BROADCASTING CHIEF DISCUSSED LOCAL RADIO, TEXT TV

Helsinki HUFVUDSTADSBLADET in Swedish 7 Jan 82 p 20

[Text] "Our present concentration on local radiobroadcasting--which Tampere and Turku received at the turn of the year--and on text TV depends first of all on the economic consolidation which Oy Yleisradio Ab must carry out and on the fact that both, from an economic point of view, are relatively easy to implement, in spite of being of great importance," Director General Sakari Kiuru said in Turku last Wednesday.

The reason for Kiuru's visit to Turku was the start of the local radiobroadcasting operation, a form of broadcasting which is first of all intended for Turku and its surroundings, similar to the way Radio Helsinki and, for example, Radio Mellannyländ operate. He explained that it is right now important for radio to create a larger output by redistributing the resources and using them more effectively.

"Local radiobroadcasting is also in its capacity of a local forum--we do not want to discuss neighborhood radio as we feel that it affects only parts of cities or even blocks--of great importance in counteracting the equalization we are all today affected by because of increasing internationalization," said Director General Kiuru. He also explained that radio is now emphasizing the development particularly of the local broadcasting network and one cannot ever count on getting local TV as an ether medium in our country.

## Local Cable TV

"This would be altogether too expensive; I don't believe anyone today can imagine something like it. But we can, although we are expressively an ether medium, conceive of producing local TV using the cable technique in the future," said Sakari Kiuru, who also pointed out that Finland's television has a considerable program output which is not sufficiently utilized--this could many times come in handy on the local level, maybe in combination with other material.

But local TV is for the time being somewhat distant and Kiuru thinks that there is just now reason to concentrate above all on radio, because it was left behind while the TV network was expanded and the efforts within Yleisradio particularly concerned TV.

"The local radio can be an independent forum and, depending on the contribution of the editors, become an important forum for the exchange of opinions. Here one needs not only to cover news and give information about weather and wind, traffic and so on, but also controversial questions could be dealt with, if it were done correctly," said General Director Kiuru.

He emphasized also that even if the local radio system in many ways is patterned on foreign models--of which there are plenty--one will, for example, not copy the Swedish system of different local radio corporations, but continue keeping everything under one roof, because this provides many opportunities for combinations and transfer from national networks to local radio networks and vice versa.

In any case, now it is foremost a question of consolidation of the operation and we can therefore not promise any expansion of the operation in the next few years.

#### Licensing Decision Shortly

Sakari Kiuru also mentioned the promised increase in license fees and thought it quite likely that it will be initiated this summer in the form of an increase of between 17 and 20 percent, depending on the form of the license. The government should be making a decision on this matter in the next few weeks.

"But the system as it is today is not good. It is difficult for us to draw up budgets when an increase in fees is always a controversial question. We are hoping for a system like the one used at present for postal fees which increase concurrently with increased expenses and inflation," Kiuru said.

There are, moreover, quite a few irregularities in the use of radio funds. The educational programs are, for example, today paid by license money, something not done anywhere else, and the government also thinks that it is up to the radio system to rebuild the short wave station in Bjorneborg, although its activities are totally aimed at foreign countries. The same is true of the long wave transmitter in Lahtis which is to be moved to Kasnas in Dragsfjard--radio funds should not even have to finance this.

Director General Kiuru was also worried that commercial TV in the future will not be able to bear approximately 20 percent of the radiobroadcasting expenses as it seems clear that, for example, the innovations in which one is today investing do not at all bring profits, but are instead terribly expensive for the corporation. This can actually in the long run affect the licensees, Kiuru said.

9843

CSO: 5500/2096

## COMPUTER USE ON FARMS EXPECTED TO INCREASE, PROVIDE BENEFITS

Paris LE NOUVEL ECONOMISTE in French 25 Jan 82 pp 36-37

[Article by Philippe Le Corroller: "Computers on the Farm"]

[Text] Obviously, it is Japanese! The first microcomputer installed on a farm at Vangeton, Vienne, near Poitiers, is a Sord M 233. "A farm operation is a business," the farmer, Mr Daniel Riquet, somewhat surprised at the interest aroused by his purchase, explains calmly. However, he is aware that some of the 859,000 farm managers represent a tremendous potential market opening up for industry. "For the time being, fewer than 100 farmers are equipped. In 5 years, there will be tens of thousands," says the IBM office in Paris, which is offering farmers its newest product, the IBM 23. "You will witness a phenomenon comparable to the appearance of the tractor 30 years ago."

On his 50 hectares, Mr Riquet has built two sheds in which he raises kids on powdered milk for export to Italy. Purchased 4 or 5 days after their birth from 400 breeders in the peripheral departments, the 15,000 animals he "moves" in a season are fattened on his farm for 5 weeks. To manage the suppliers' accounts from day to day with the computer (costing 30,000 francs), this livestock farmer ordered a specially designed program, at a cost of 12,000 francs. Another program--3,000 francs--allows him to obtain the annual balance for the operation instantly. At the touch of a few keys on the console, the average sale price per kg--which dropped in recent weeks from 29 francs to 17 francs--appears on the screen, along with a list of the 300 checks signed this month, and the 99 ledger entry categories (annual turnover total--3 million). This would be routine...if this were a small or average industrial enterprise.

The two program discs were produced, on order from Mr Riquet, by the Océam, the confederation of the 30 Rural Management and Economy Centers in the Center-West region, to which the farmers have traditionally entrusted the handling of their accounting processes. Why wasn't Mr Riquet content to deliver the general accounting documents for his operation to the Océam periodically, as his neighbors do? "From the time the data is gathered at the farm by the management center's accountant until processing is completed at the central computer in the neighboring city and the results sent back to the farm, several weeks, sometimes several months, elapse," he explains.

Why then was he not content with a simple telemetrics solution at his farm, so that he himself could utilize the central computer? "The Vienne Management

Center has access to the Ocean computer only once a day, between 1800 and 2000 hours. It is impossible for several thousand farmers 'to communicate' with it simultaneously. Moreover, my operation required a specific program."

This choice--a data processing terminal or a microcomputer at the farm--is indeed the great question for the rural sector, as it was for the small and average industrial enterprises 15 years ago. The question is posed less as a function of the size of the operation than its complexity. A grain grower with 600 hectares can be satisfied with passive access to a data bank supplying weather forecasts, the Chicago Grain Exchange quotations or fertilizer costs. A wine grower, on the other hand, who on his big hectares engages in direct sales, or a swine breeder, whose herd "rotates" rapidly, and who thus makes several hundred account entries every month, needs to communicate with a computer on specific programs. Also, progressive farmers could undertake "simulations" before launching into new types of production.

Who will design these programs? Four organizations have already entered the lists: the Rural Management and Economy Centers (federated by the Iger on the national level); the Chambers of Agriculture; the trade union organizations (FNSEA [National Federation of Unions of Farm Operators] and CNJA [National Young Farmers Center]); and finally, the cooperatives. Not to mention, of course, the computer counseling companies, which are finding this new market very promising.

The Iger is in the lead. Before proposing solutions to the 200 farmers who entrust their accounting balances to the Departmental Management Centers, it is initiating a double experiment this month, in Loire-Atlantique and in Aveyron. In one area, it will provide small farmers with 20 microcomputers produced by Electronic Studies Projects (REE), an affiliate of CII-HB. Fifty other farmers, on the other hand, will be provided with terminals, so that they can obtain data from the central computer in Paris via the Transpac channel. "We want to test the advantages of the two methods as a function of their cost," Mr Vincent Ortega, in charge of the experiment, explains.

In the view of computer manufacturers, naturally, the decision to purchase should be reached soon. "We are selling the IBM 23 at 48,000 francs, and with substantial rebates for institutions which place multiple orders," IBM explains. "Now the purchase of a terminal with a screen and a printer already costs 25,000 francs." But the manufacturers will be subject to the law imposed by the agricultural bodies producing software on the departmental levels: there is naturally no question of door-to-door solicitation of the farms by the industrialists.

The penetration of the farm sector by data processing will lead to three easily foreseeable consequences:

1. Today, farms are isolated and avid for technical, economic and statistical information. Emerging from this isolation, the small farmers will achieve new power. For example, they themselves will be able to compare the quality-price ratio for various types of equipment or fertilizer, in 3 seconds. This will bring the trade representatives who today ply the rural sector up short. And the same is true for veterinarians, who in turn will be obliged to use computer technology to answer questions about the dosage of feed rations for livestock, for example.

2. On the program level, there will be harsh competition among the cooperatives, industrial enterprises and management centers hoping to sell their products to the farmers.

3. The spread of technical progress, a better understanding of the markets--as in the United States, where the farmers engage in market research prior to planting--will still further widen the gap between competitive agriculture and that based on social policy.

5157

CSO: 5500/2115

GREECE

BRIEFS

TV, RADIO REBROADCAST NETWORK--An extensive network to rebroadcast ERT [Greek Radio and Television] radio and television programs will soon be established to cover the entire country and all border regions. Prime Minister Papandreou issued this directive and approved the necessary funds; he stressed the need to grant priority to the border areas for the establishment of TV rebroadcasting stations. According to reliable information, it is foreseen that residents of all borders regions will be able to get ERT broadcasts by the end of 1982. [Excerpt] [Athens TO VIMA in Greek 18 Feb 82 p 1]

CSO: 5500/5330

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MARCH 15, 1982